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NOVEMBER-DECEMBER 1984

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# INTERVIEW
## The Men Who Made Basic

# IBM's PC AT
## First Close Look

# PREVIEW
## Data General's Portable

# REVIEWS dBase III Framework Labtam

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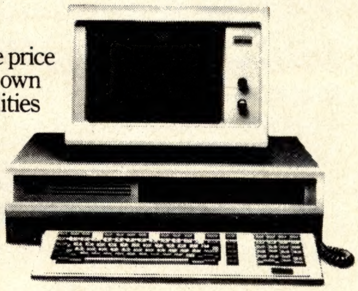

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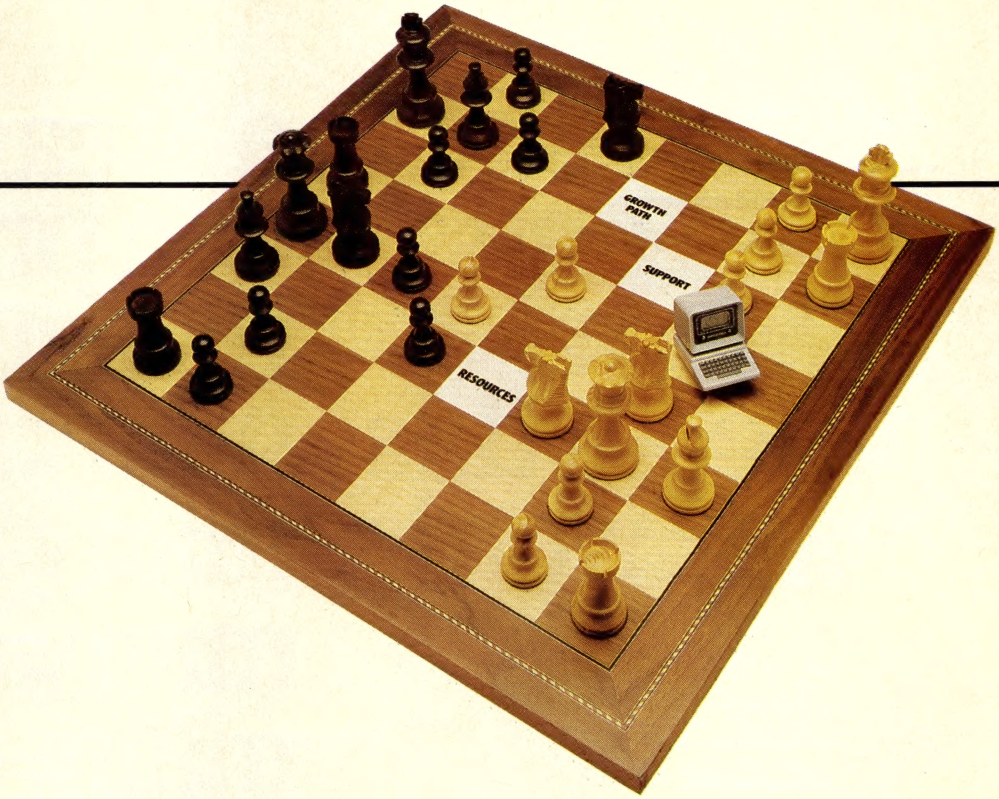

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*Cover photography: Graeme Gillies*

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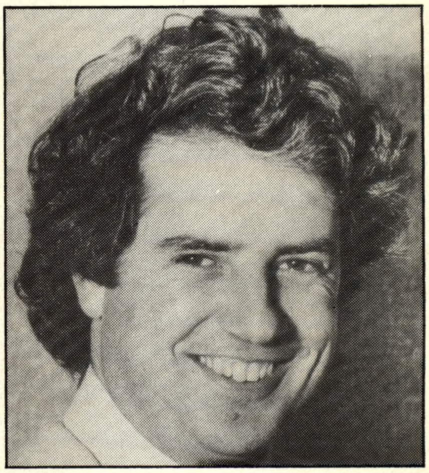
## EDITORIAL

# Another brick in the wall



IN A recent interview, microcomputer industry pioneer George Morrow said he wasn't sure any more what business he was in.

Morrow's comments come at a time of transition for the microcomputer industry, from its privileged position at the centre of people-computer interaction to a position on the periphery. This transition is best documented by the appearance of books like Fire in the Valley, Hackers, The New Alchemists, Digital Deli and The Magic Kingdom, securing the activity of the '70s as myth in the service of the marketing machines of the '80s.

His uncertainty isn't shared by the marketeers, hawking the delights of the information revolution, and claiming that we've all got to get I.T., or as Mr T growls, "Hey turkey, you better buy Atari!"

Information Technology has become the focus of public relations campaigns to support the massive social engineering campaigns of the private and public sectors. The main thrust of these campaigns is to promote I.T. as the new frontier, a vision of progress that matches the enthusiasm of the private, and public sectors for energy development in the '50s and '60s. In a similar fashion to the social improvement campaigns of earlier decades, the services of those involved with the technology and educators are appropriated. Both groups have difficulty matching the message with the reality of their work.

Educators have been gripped with a peculiar reluctance to confront the impact of information technology, perhaps because, as information workers in the biggest information business, they are right in the front line. Computer awareness must be the only subject considered important enough to be taught in schools, where educators spend a lot of time insisting that, as the technology spreads throughout society, there will be so little need to teach students about this technology that these courses will disappear.

Their reluctance to teach about computers as part of the everyday life, and their difficulty with the concepts of power and control — central to any social understanding of the technology — seem to be closely related to concerns that this may undermine the current growth in educational computing.

Unless a people-based vision of I.T. prevails over the product-based vision, the efforts of the private and public sectors to sell I.T., intended to create a society of compliant consumers for the products of the information economy, will be treated with the cynicism and hostility all re-education programs provoke.

From next month, *Australian Micro Computerworld* will be published in tabloid format as a separate publication. It will continue to be presented as a good-quality product. Most importantly, it will also be inserted in *Computerworld Australia,* Australia's top tabloid newsweekly for the computer community — home of the massive multi-unit micro buyers.

**— IAN WEBSTER.**

# Give yourself a break ...

How many activities are you doing at the moment? Reading, listening, thinking. Why shouldn't your Personal Computer be as versatile? Think of the time it could save you. No need to wait while your PC runs payroll or quit your spreadsheet to answer questions about stock. ■ You need the timesaver — the remarkable Concurrent PC DOS from Digital Research. This lets you run up to four separate jobs simultaneously. You start a single program just as you do now. But when you want to, just touch a key and you get a fresh screen to work with... while your original program continues to run. ■ A two-user facility is ideal for people who communicate regularly to remote staff or offices. ■ Remember, each of your four programs is only a keystroke away. ■ And with the built-in window facility, you can keep track of all of your work on screen simply and easily. ■ **Get a personal demonstration of Concurrent PC DOS at your local micro dealer, or complete the coupon below for more information.**

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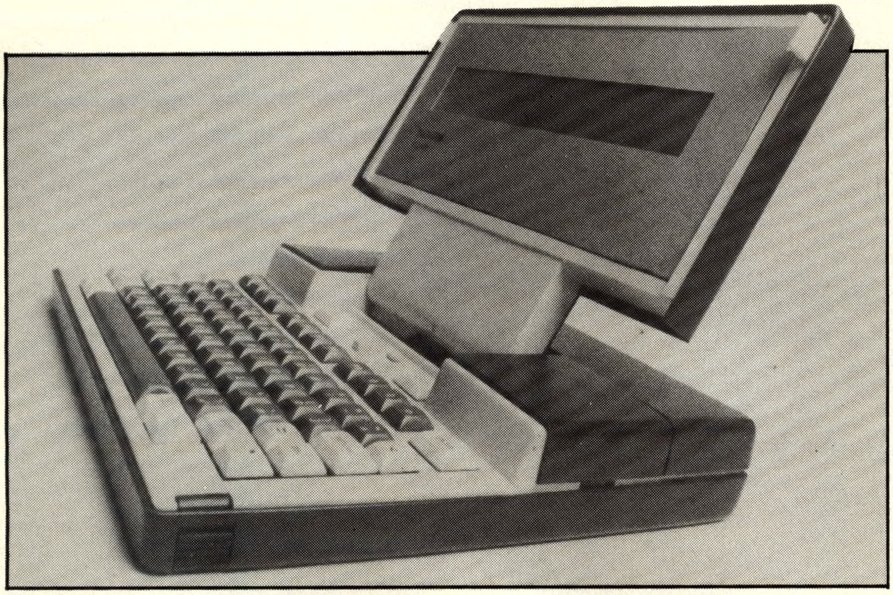

The Magnum has been renamed the Kookaburra.

# THE MAGNUM FIRES AGAIN

***Time Office takes over from ailing company — and the Magnum becomes a Kookaburra workstation.***

TIME Office Computers (Manufacturing) Pty Ltd plans to integrate the Dulmont Magnum lap portable microcomputer into an ergonomic workstation and to conduct a massive revamp of the marketing of the product including a name change.

The workstation will be released soon. The move follows the approval by the NSW government for $1 million in loans and guarantees for Time Office to buy the ailing NSW manufacturer Dulmont Electronic Systems.

Time Office has also picked up Dulmont's indebtedness, understood to be more than $2 million. The managing director of Time Office, Michael Roberts, said he was negotiating with Dulmont's shareholders and creditors on an arrangement for debt settlement.

Dulmont was 40 per cent owned by Dulmision Australia and 60 per cent by Tramont, a company with Swiss and Belgian backing. Roberts said those companies would no longer be involved with Dulmont.

The funding for Time Office's purchase of the company came from the NSW government's Advanced Technology Development Assistance Fund in the form of a $500,000 loan and a $500,000 guarantee, the maximum it can provide.

The Magnum has been renamed the Kookaburra and will be packaged in a moulded leather case. The system now comes standard with a 16-line LCD, 256K-bytes of RAM, MS-DOS 2.11, word processing and an electronic spreadsheet.

Despite independent claims that the machine has been superseded by the recently announced Hewlett-Packard HP-110 and Data General/One, Roberts is confident it will hold its place in the market. He expects to hold initial production at about 500 machines a month. "I feel it has good, solid technological advantages such as the high-resolution video output which allows it to integrate into our other products, the 8MHz processor, 256K-bytes of CMOS RAM and good, although not total, IBM compatibility," he said.

Roberts gave no details of arrangements with creditors and shareholders, but said it was intended that the company generate profits almost immediately.

# EXECUTIVE'S DEATH NIGH

ANOTHER portable appears to have reached the end of the road: the Executive 816 *briefcase* microcomputer is not expected to survive to the end of this year.

Amust Compak Manufacturing, which has been run by management company TH Bentley and Co, will be liquidated by mid-November according to a well-informed industry source.

One of its directors, Ron Harris, says creditors will be paid off "100 cents in the dollar", and the company will then be handed back to the original directors.

The company was set up in early 1983 to manufacture the Executive 816, which not only fits *in* a briefcase but was supplied in one. The name Amust Compak Manufacturing was derived from the combination of Amust — the Japanese company that helped build the machine and licensed its name in return for distribution rights — and the name of the designers, Compak Microcomputer Products.

Harris approached Amust with the design of the 816, and the new company was formed. In August 1983 the machine was launched by Barry Jones, Minister for Science and Technology, who described it as: "a remarkable combination of Australian software, Japanese hardware and American briefcase".

However, problems soon set in for Amust Compak Manufacturing, including software bugs according to the source.

Harris claimed the major cause of the collapse was lack of financing.

The source said Harris was discontented with Amust's efforts at selling the machine, and the two went their separate ways.

Although a turnover of $1.6-1.7 million (for the 12 months during which ACM operated) has been claimed by Harris, fewer than 600 systems are known to have been sold in that time.

At time of writing, "Dan" Kuroda,

the chairman of directors of the Japanese Amust Computer Corporation (which went bankrupt in April with $9.5 million in debts) held 76 per cent of controlling shares in Amust Compak Manufacturing.

Kuroda, a wealthy man, parted with Amust (Tokyo) just before it went bankrupt and set up his own company, Micro Semiconductor. Kuroda was also instrumental in establishing Amust Computer Corporation of Australia as a wholly Australian-owned company.

And Amust Computer Corporation of Australia is still going strong. It is well known for its range of printers and peripherals, and its turnover last year was more than $4 million.

Harris is not doing so well. His company Compak Microcomputer Products has folded, and he is now working for the recently appointed distributor of the 816, Porchester Computers.

Harris said that Porchester supported existing 816 machines, that all warranties were being honored, and that Porchester had stocks of the original machine.

A new version of the machine has been produced for desktop use, and Harris — who said he was still interested in the concept of an Australian-designed machine — said Porchester will be backing future development, including the 16-bit versions of the 816, and new machines.

# MR T COMES OUT FIGHTING

TWO of Australia's major home computer distributors are pitching their forces against each other in an unprecedented pre-Christmas marketing onslaught.

Futuretronics, distributor for Atari products in Australia, has already launched a new campaign featuring a star of the popular TV series The A-Team.

Mr T plays a major role in the campaign, which is as aggressive as Mr T himself.

The commercials present Mr T in real life and in computer graphic form virtually "dictating" to the viewer that the Atari machine is the best.

Users of other computers are dismissed as "turkeys" by Mr T in the 30-second commercials, both geared towards "heavy" selling.

Futuretronics, no longer happy with Atari's reputation as a games manufacturer, is trying to make Atari computers become regarded as viable computer systems for home use.

Meanwhile, Commodore Business Machines will spend massively to continue marketing the C64 computer, said to be the most popular machine on the Australian market. The current advertising campaign is aimed at the family, claiming that computers are as easy to buy (and use) as a "fridge, stove or toaster".

**No turkeys on Mr T.**

The company will "probably double the advertising budget of all its competitors combined," according to Richard Beaman, managing director of Commodore's advertising agency.

In Australia Commodore's marketing approach is heavily oriented towards the family. Commodore is the market leader in the under $1000 market.

With the demise of the Vic 20, the new C16 is ready to take its place, although no plans had been made to promote it directly by Commodore.

# TELECOM'S STANCES

TELECOM has taken an aggressive stance in the videotex market with the announcement of charges for its Viatel service (to be launched next February) well below those offered by private networks.

Announcing the prices, Telecom's general manager of commercial services, Dr Laurie Mackechnie, said the rates had been set initially to encourage rapid growth in the industry.

When the service goes live, rates for subscribers will be $12.50 for the first year, then $12.50 per month for business users and $2.50 per month for non-business users. Connect time will cost 8¢/min, well below the 20¢/min expected, and 5¢/min at other times.

Service providers will pay $225 a month which includes 50 screens of information. Providers will pay 40¢ a month for each additional screen up to 1000, reducing to 20¢ a screen for more than 5000 screens.

Telecom has also tried to attract quick response from information providers with the offer of a $10 rebate for each user registered on Viatel until the fee is reduced to zero.

The Commonwealth Bank is one of the first to offer a service for the general public with the announcement of an agreement with GEC Australia to provide a home banking service.

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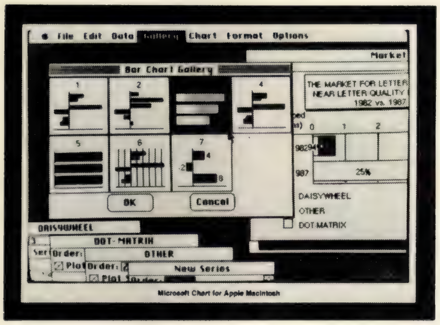

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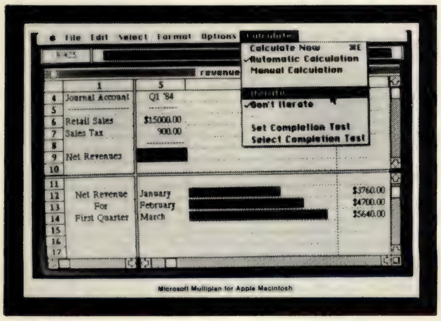

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| 4 | Journal Account | Q1 '84 | |
| 5 | | | |
| 6 | Retail Sales | $15000.00 | |
| 7 | Sales Tax | 900.00 | |
| 8 | | | |
| 9 | Net Revenues | | |
| 10 | | | |
| 11 | | | |
| 12 | Net Revenue | January | $3760.00 |
| 13 | For | February | $4700.00 |
| 14 | First Quarter | March | $5640.00 |
| 15 | | | |
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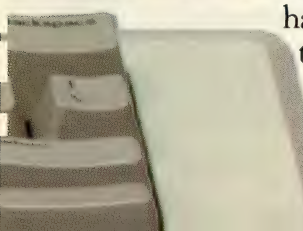
Microsoft Multiplan for Apple Macintosh



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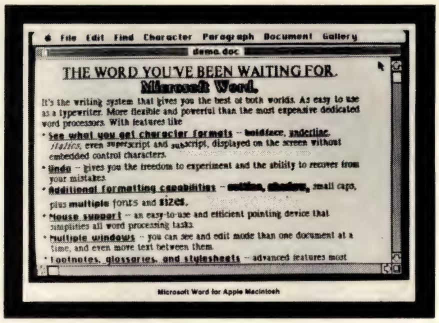

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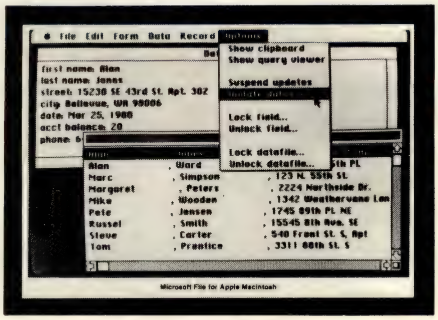

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last name: Jonas
street: 15230 SE 43rd St. Apt. 302
city: Bellevue, WA 98006
date: Mar 25, 1980
acct balance: 20
phone: 6

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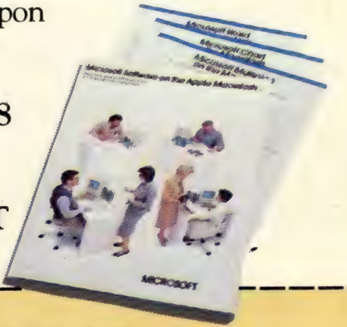

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**QUESTIONS & ANSWERS** — when you go into a ROOM META4 asks you QUESTIONS about the type of thing (e.g. CUSTOMER, INVOICE, PRODUCT etc) held in the ROOM and stores away your ANSWERS

**RECORDS** — META4 stores the ANSWERS to a set of QUESTIONS in a room as a RECORD. There can be many RECORDS in a room

**DOORWAYS** — You can move from ROOM to ROOM through DOORWAYS. META4 automatically relates information in one ROOM to information in the next

**BUILDINGS** — A building is a collection of related ROOMS and DOORWAYS. A BUILDING corresponds to the traditional concept of a Data base

**META4 IS PORTABLE**

Any applications you develop under META4 will run without change on any computer that META4 runs on

**EASE OF USE**

- SIMPLE and CONSISTENT
- HELP — 3 levels for the current
  - BUILDING you are in
  - ROOM you are in
  - QUESTION being asked
- 3 TUTORIALS
  - USING META 4
  - DESIGNING WITH META 4
  - META 4 EXAMPLES

Designed from the ground up to be totally consistent and as easy to install, learn and use as possible

**META4 IS EXTENDABLE**

All the features of the system are fully extendable to your own applications. You can add your own BUILDINGS, ROOMS, DOORWAYS and QUESTIONS. You can define your own maps, HELP text and tutorials

**WRITTEN IN ITSELF**

Only META4 is powerful and elegant enough to use itself. All the system documentation is stored in standard META4 BUILDINGS and printed out as a standard META4 report. When you use META4 to define a new application you answer standard META4 questions in standard rooms in a META4 building

**DETAILED FACILITIES**

- Menu driven
- True DATA BASE — RELATIONAL/NETWORK
- Variety of Answer-types e.g. CALCULATED, DATE, YES/NO, NUMERIC, TEXT, LIST
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- Automatic VALIDATION
- Powerful Selection & Reporting
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*Apple Users Society of Melbourne

## TI SLASHES MICRO PRICES

TEXAS Instruments Australia has made a major revision of its microcomputer pricing as the first move in a campaign the company claims will achieve No 2 position in the professional computer market inside a year.

The company has cut prices of its microcomputer products across the board by up to 26 per cent, and is launching a major campaign through its dealers and the media. The price cuts, averaging 20 per cent, range from 14 per cent for a 256K-byte color PC with 10M-bytes of storage to 25 per cent for a double disk drive, 128K-byte monochrome PC.

TI Australia had been gearing up for this campaign for some time. The company had shipped product in bulk from the US. These cuts, combined with the reduction in import duties and new shipping packaging had virtually removed the disparity between US and Australian retail prices, the company said.

"This enabled us to make genuine new pricing — not temporary cuts at the expense of dealer margins," a company spokesman said. The new prices are effective from October 22.

**Teletext decoding kit.**

## DICK SMITH'S DECODING KIT

DICK Smith Electronics has released a new kit that decodes teletext information and, importantly, the closed caption service for those with hearing problems.

The closed caption service is similar to the subtitle system televison Channel 0/28 uses in Sydney and Melbourne, but it isn't transmitted as part of the picture on the screen.

The captions (which are displayed on a continually updated teletext page) appear at the bottom of the screen.

Although the kit is cheaper than teletext adaptors or television sets with built-in teletext decoders, there are several catches. First, one of the most expensive components of such a device is the tuner assembly. Because VCRs have built-in tuners and Dick Smith Electronics estimates that more than 50 per cent of Australian homes have them, the kit uses the tuner assembly in a video cassette recorder, in either VHS or Beta format.

Second, the kit has to be assembled. The company warns that some experience is needed. But teletext information is free, and it is likely to remain so as television stations have few ways of charging viewers.

## SYSTEM V ARRIVES

ONE of the first computer systems claimed to run System V, the AT&T-supported version of Unix, has arrived in Australia. Insystems, a South Melbourne distributor of Cromemco computers, has received stocks of the new System 100 and System 300 supermicros.

Four configurations of each model are available ranging from 512K-bytes of RAM with 390K-bytes of floppy disk storage, 50M-bytes of hard-disk storage and two expansion slots, to 16M-bytes of RAM with 1200M-bytes of hard-disk storage, 1.2M-bytes of floppy disk storage and 14 expansion slots. All the models use the 68000 processor.

Dr Harry Garland, president and co-founder of Cromemco, visited Australia recently, to promote the launching of the range. He said he believed Cromemco was one of the first, if not the first, manufacturer to offer Unix System V in a supermicro. He said Cromemco had decided to use System V only because AT&T had supported that multi-user operating system.

Cromemco had used the bus approach for all its machines (excepting the C-10 micro), and users of the company's original computers could expand their 8-bit, 16K-byte computers to a 16M-byte supermicro running Unix V, Dr Garland said.

He said the 68000 processor was chosen because "it is the first in a family of chips from Motorola.

"All software being run on the 68000 can now be upgraded to run on the 68010, and 68020 as those chips become available," he said. Cromemco's first sales of the new machines, which were released in the US at the last NCC, included orders for three machines with the full 16M-bytes of RAM, to replace an existing $US2 million mainframe. He claims Cromemco is the oldest microcomputer company in the world.

# Beam Me Down, Scotty...

### *Star Wars graphics boss gives a stunning sci-fi demonstration at Austgraph 84 with Pixar system.*

MELBOURNE's Ausgraph 84 conference and exhibition attracted more than 30 speakers, including personalities such as Dr Irwin Jarett, from Graphic M*I*S, Alvy Ray Smith, from Lucasfilms, and Kurt Ingenthron, from Intergraph. More than 2500 people attended the exhibition, which involved 25 companies.

The proceedings were officially opened on the third day by Victoria's Minister for Industry, Commerce and Technology, Ian Cathie, who expressed some regret that Australian graduates in computer animation felt a need to seek employment overseas. "I hope this situation will not continue in future, and that we an develop strong local capabilities in that area," he said.

To promote this industry in Australia, the Federal government will provide a $240,000 grant to Swinburne for a Computer Animation Centre which was opened by Alvy Ray Smith from Lucasfilms and Sally Pryor, who also spoke at Ausgraph 84.

Did James Blish know what he was starting when he wrote the original Star Trek book in 1967? Three movies have been made, countless numbers of further books have been produced and a television series was also created.

Stories have appeared in the press concerning high technology with classic phrases lifted from the series such as: "Beam me up, Scotty" and "To boldly go where no man has gone before." The second movie was an absolute gem (Yes, I'm a Star Trek freak too) and the third promises to be even better. So imagine my delight when I spotted Alvy Ray Smith's name on the Ausgraph 84 conference program.

Who is he? Head of Lucasfilm's Computer Graphics Project, which created some of the graphics used in The Star Wars trilogy, and Star Trek II — The Wrath of Khan. The division Smith runs is also involved in developing the Pixar picture system.

Smith demonstrated Lucasfilm's capabilities through several shorts for Star Trek II. The movie's plot revolves around a "bomb" that makes a dead, moon-like planet change into a life-supporting Earth-type planet.

Captain James T. Kirk is given a videotape briefing of the "Genesis" effect, and that particular segment is where Lucasfilms was involved.

Before he can view the video, Kirk's iris is scanned and checked for security purposes. Kirk's iris is matched with a pre-recorded definition of the correct pattern. Similar to the concept of fingerprints, except things like that don't take up to a week to check *in movies*! The iris check sequence was interesting to watch, although fairly low-resolution graphics was used, and a block style was adhered to throughout.

When the security computer has checked and confirmed Kirk's iris, the really breathtaking graphics begin. Kirk is then shown a video called the Genesis Demo which illustrates the effects of the Genesis "bomb".

The first few frames show how Lucasfilms created the simulated video and is in black and white line graphics only. The camera follows a light path towards the planet, and in particular the point of impact of the "bomb". Drawing close to the planet's surface, the camera sweeps around from one side to another, closely followed by the wall of fire created by the "bomb". The fire eventually overtakes the camera, and leaves behind it the beginnings of a rebirth of the moon-like surface. Mountains, seas, and forests appear, and snow covers the tops of mountains.

The flight path veers the camera away from the planet's surface and into space, providing a shot of it similar to pictures taken of Earth from contemporary spacecraft. True, at times the graphics appeared to be a fraction less than the real thing, but have you ever seen mountains appear from nowhere in only a few seconds? Besides, Smith maintains that it is "not his goal to simulate reality" anyway.

So how was the Genesis Demo video simulation created? With a combination of commonly used tricks, six months developed time, a VAX 11/750 minicomputer, and the C programming language.

Smith and other members of the Lucasfilm graphics team will form a company to market the Pixar hardware they have developed. Beam me down Scotty, Alvy Ray Smith is showing some more films.

# Now, tailor-made business software at off-the-hook prices.

Until now, there was a real problem for people buying their first micro-computer.

They had to make do with a standard off-the-hook software package. And normally that was so rigid in design that business methods had to be adjusted to suit it. Often, expensive custom-written software had to be used for special requirements beyond the rather severe limitations of a standard package.

So, whether you supply micro-computers or are about to buy one, the coming of Power Software is extraordinarily good news.

Here, for the first time, is a suite of software that costs the same as an ordinary package – yet which can be tailored to suit exact processing requirements and business procedures.

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Power Software can be tailored to suit exact requirements much more quickly and economically than conventional systems. And it operates on a wide range of 16 Bit, MS-DOS computers, including IBM-PC, TeleVideo, Corona, Olivetti, Dec Rainbow, NEC, Sirius, TI-PC and a host of other machines.

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# NEWS

## APPLE FILES MORE SUITS

APPLE Computer Inc has announced that it has filed injunctions against 19 Singaporean companies, preventing the assembly, sale or distribution of computers that Apple says infringe registered patents owned by Apple. The injunctions granted by the Singapore High Court restrain the further sale by each defendant of products that allegedly violate Apple patents until a further hearing.

This is the second time Apple has invoked legal proceedings against retailers of computer products in Singapore. Early last year, the company took action against 11 retailers and one assembler in Singapore. The company has since stepped up its legal campaign to eliminate computer counterfeiting and piracy throughout the world.

Early this year, a US Federal Court entered a judgment of $US2.5 million against Franklin Computer Corp for copying 14 of Apple's computer operating systems. In May, Apple won a major court appeal in Australia against a Taiwanese computer assembler. The full Bench of Sydney's Federal Court upheld an appeal by Apple that a Taiwanese computer being sold in Australia as the Wombat infringed copyright.

## IBM BITES INTO APPLE

MOVING to try to break Apple's strangehold on the educational market, IBM has agreed to cosponsor an ambitious project to train about 32,000 US grade school, high school and college teachers to use computers. IBM's deal with the National Computer Training Institute consists of funding and the lending of more than 1500 IBM PCjrs with software, printers and modems.

The Californian institute claims its effort is the first US-wide project to train teachers at public and private schools in programming and applications. In so doing, it will help address long-standing complaints about the lack of computer training for the nation's three million teachers.

The influential education market is dominated by IBM's archrival, Apple Computer, which has placed its computers in 67 per cent of US schools. IBM, on the other hand, has captured less than three per cent of the education market, according to a survey conducted last year by Market Data Retrieval, of Westport, Connecticut.

## WINDOWS TAKES ON TOPVIEW

MICROSOFT Corp plans to compete directly with IBM's TopView operating system extension by selling its MS-Windows as a retail product. The company plans to sell Windows for $US195 with a mouse and $US80 without, several sources said.

When Windows was announced last November, it was introduced as a multi-windowed extension to MS-DOS that would integrate third-party applications and be sold through OEMs. At the announcement, more than 20 OEMs said they would support the product.

IBM was not among those OEMs agreeing to support Windows, and in August the company announced TopView, its own operating system extension. That product, priced at $US149, will function similarly to Windows and will be sold through retail outlets.

## AMIGA 32-BIT NEXT YEAR

CONSUMERS won't be seeing Commodore's 32-bit personal computer on shelves this Christmas, but the Pennsylvania computer giant's purchase of Amiga Corp of California, makes such a computer a sure bet for next year.

Amiga's unnamed computer, now a prototype, uses the Motorola 68000 microprocessor, also used in Apple's Macintosh. But the Amiga machine also uses three custom graphics chips that give the computer the graphics and something no other personal computer includes — clear 80-column text on a normal television set.

Commodore president Marshall Smith was quoted recently as saying that Commodore would soon introduce a machine similar to the Macintosh, but costing less than $1000 — virtually a description of the Amiga computer. Atari, now owned by Jack Tramiel, former president of Commodore, is also working on such a machine, sources say.

## INTERNAL SOFTWARE

IBM has announced the first of its internally developed software for the PC — 31 programs that work together as productivity and accounting tools. The Personal Decision series and the Business Management series could offer serious competition to developers, such as Lotus Development Corp and Ashton-Tate, that now offer integrated software.

The Personal Decision series is a set of integrated productivity tools, ranging from $US150 to $US300, that will be available in the US by the end of the year. The series is divided into several programs, called editions, which are used for analysing spreadsheets, generating reports, producing graphics — and other applications.

Productivity enhancements for such applications as appointment scheduling and very high-end applications for micro-to-mainframe connections are also included. The mainframe links will not be available until next year and will cost more than $US15,000.

# Tallgrass' integrated tape backup – clearing the PC path.

Tallgrass Technologies' hard disk drives with integral cartridge tape backup. They offer serious users of PC's unmatched performance in mass storage, speed, and data integrity together with the highest capacity PC backup system available, integrated for simplicity, speed, and ease of use.

For the serious user, that's the direct path through the PC jungle.

**MASS STORAGE.** Tallgrass expands the capacity of your PC with hard disk drive/integral cartridge tape back systems in formatted capacities of 12-70 megabytes.

**SPEED.** The unique Tallgrass on-board buffer greatly increases data transfer rates in comparison to conventional systems – substantially decreasing loading and retrieval times.

**DATA INTEGRITY.** Tallgrass ensures data integrity with high level error checking and options including duplicate directory, 'read after write' verification, and a dedicated 'head landing' zone that precludes data loss during power downs.

**BACKUP.** Tallgrass' unique integral cartridge tape backup combines speed with high capacity to encourage reliable routine operator backup of your data.

**COMPATIBILITY.** Tallgrass systems are fully compatible with a growing list of IBM-compatible PC's including IBM PC and XT, Columbia, Corona/Wordplex, Compaq, Eagle, Olivetti, Panasonic, Pantek, Televideo, and T.I. Professional.

**NETWORK READY.** Fully compatible with industry standard networks such as PC Net – II and 3 Com, Tallgrass hard disk/cartridge tape systems offer the capacity, speed, data integrity, and backup essential to local area networks.

Since pioneering integral cartridge tape backup systems, Tallgrass has remained the US industry standard. For economy, ease of use, reliability, high speed loading and retrieval, and multisystem compatibility, Tallgrass is by far the best mass storage system on the market today.

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# IBM's PC AT

## Power at the Right Pr

IBM's new top-of-the-line personal computer, the PC AT, is being marketed as a potent single-user or multi-user system and as the fulcrum of IBM's new local area network. Ken Greenberg and Karl Koessel say that, at first glance, the AT appears to be as malleable — and as subject to third-party sculpting — as the IBM PC itself.

WITH unusual candor, IBM president John Akers told Computerworld earlier this year that the company was planning to exploit a host of new technologies and fill market niches. Akers vowed that, in the next five years, IBM would emphasise "personal computers and workstations; communications products; software of all kinds, both system software and application software; and storage products from high to low, both hard and floppy disks."

On August 14, IBM rolled out the PC AT (Advanced Technology) and began to make good on John Akers' pledge. In adding the AT and an array of related products to its line-up, IBM has covered a number of bases with a single price-competitive swat. With the AT, IBM is offering enhanced system support (via three new operating systems), filling the gap between the PC XT and the 3270-PC and tying together a broad spectrum of IBM computer products with a local area network (LAN). IBM is also spurring development of multi-user and multitasking applications by pegging them to a machine that features high speed, storage, and expandability.

The PC AT is a formidable standalone personal computer, consolidating existing and forward-looking technologies — and inching into the realm of the so-called supermicro. It's the first personal computer from a major manufacturer to be built around Intel's 16-bit, multitasking, multi-user 80286 microprocessor, although the 80286 still remains a chip in search of worthy software.

IBM has produced a machine that maintains some compatibility with the rest of the PC line, even though most components cannot be interchanged with the PC. IBM is proclaiming that the PC AT is an "open architecture" box toward which third-party enhancements can gravitate. As it did with every member of the PC family, IBM has released the PC AT's technical reference manual. Although it's barely out of the starting gate, the PC AT is already the impetus for a new generation of expansion boards, disk media, windowing software and networking products.

Sharing equal billing with the PC AT's standalone capabilities is its powerful communications abilities. Given the appropriate operating system, the PC AT will collaborate with other PCs in either a multi-user (shared processor) or networked (shared data and hardware) setting. The PC AT is the centrepiece of IBM's new PC Network, and offering that fits into the company's larger scheme to link all of its computer products, from micro to mainframes.

## FEATURES

The PC AT comes in two basic models, both of which can be customised. Model 68, priced at $US3995, has 256K-bytes of installed RAM and a single half-height 5¼in floppy disk drive with 1.2M-bytes of storage, four times the amount of the PC's 360K-byte floppy disk drive. Model 99 sells for $US5795 and features 512K-bytes of installed RAM, the 1.2M-byte floppy disk drive, a combination serial and parallel board, and a full-height 20M-byte hard disk. (By comparison, $4395 buys a PC XT with 256K-bytes of RAM, a 360K-byte floppy disk drive, a serial board, and a 10M-byte hard disk).

Both PC AT models are built around the Intel 6MHz 16-bit 80286 microprocessor and IBM's new 16-bit input/output bus, performing at a rate two to three times faster than the PC. While the added speed won't make you a more accomplished typist or quicken the pulse of your printer, it will hasten copying files, recalculating worksheets, and sorting database records (Table 1).

Common to both versions of the PC AT are 64K-bytes of ROM (including an enhanced Basic interpreter), the capacity for up to 3M-bytes of user memory, a real-time clock/calendar with battery backup, a socket for the 80287 maths coprocessor, a combination floppy disk and hard-disk controller board, eight expansion slots, and a 192-Watt power supply (including a fan whose speed varies with the temperature, reducing operating noise).

The PC AT boasts a revamped 84-key keyboard with modifications that are apt to please PC critics. The PC AT keyboard, however, cannot be used with the PC or any other product in IBM's PC family. One other feature worth noting is a security lock on the front of the system unit, designed to control access in network settings. Locking the PC AT prevents rebooting, shuts down the keyboard, and prohibits removal of the system unit cover. Keylock is also available for the PC,

The new IBM machine does not include a video board or a monitor. The PC's monochrome and color graphics boards work on the PC AT, but a lot of the existing PC hardware doesn't. Among PC AT options are a half-height 5¼in 320/360K-byte floppy disk drive, a second internal 20M-byte hard disk, a Floor Standing enclosure, and a tilt-and-swivel monitor stand (suitable for IBM's entire PC line). Although it's a slightly different kind of option, PC DOS 3.00 is the PC AT's new single-user, single-tasking operating system; it is priced at $US65.

## MEDIA IS THE MESSAGE

The PC AT is most modular in the area of disk storage. The new machine is equipped with compartments for three disk drives — either two half-height floppy disk drives and a full-height 20M-byte hard disk, or a single half-height floppy disk drive and two full-height 20M-byte hard disks. The second hard disk is tucked under the 1.2M-byte floppy drive in the PC AT's right-hand compartment. A 1.2M-byte floppy disk drive sells for $US225 more than the new half-height 320/360K-byte drive.

The AT also offers a choice of floppy disk drive capacities.PC-DOS 3.00, the primary operating system, reads and writes in the traditional 320/360K-byte floppy format, but IBM is selling the PC AT's 320/360K-byte unit only as a second floppy disk drive. PC-DOS 3.00 is tailored to the 1.2M-byte floppy disk drive, which means certain limitations as well as added storage space.

If you need data interchange via standard 320/360K-byte disks, you'll need to add the PC AT's 320/360K-byte floppy disk drive. The 1.2M-byte floppy drive can read and write in the 320/360K-byte formats, but what it writes can only be read by the 1.2M-byte read/write head. That head is more narrow — and sensitive — than the read/write head in the PC's 320/360K-byte drive.

## PLAYING THE SLOTS

The PC AT was built to grow. The machine features eight full-length expansion slots, each with a standard 62-pin connector that accepts boards designed for the PC's 8-bit data bus. Six of the eight slots are accompanied by an additional 36-pin connector, making it possible to transfer data in 16-bit segments and address more than 1M-byte of memory.

The combination floppy and hard disk controller board fills one 16-bit slot on the Model 68, leaving seven slots free. The combination serial and parallel board takes up an extra 16-bit slot in the Model 99.

IBM has filled half the 36 RAM sockets on the Model 68's motherboard with "memory modules," each consisting of two 64K-byte-by-1-bit RAM chips piggybacked one on top of the other. (Nine regular 64K-byte-by-1-bit RAM chips provide 64K-bytes of RAM on a PC; nine piggybacked chips provide 128K-bytes ). The PC AT motherboard accepts only these unique modules, and only in increments of 18 — thus supplying the Model 68's 256K-bytes of RAM. The Model 99 features 36 such piggyback modules, filling the motherboard RAM sockets. To beef up the Model 68's RAM to 512K-bytes, you can buy a 256K-byte memory module expansion kit for $US495. But before you can add the memory expansion board to the Model 68, you'll first need to fill the motherboard's RAM sockets.

Both PC AT models can accept one 128K-byte memory expansion option once the motherboard is filled with RAM. This brings the machine up to 640K-bytes, the maximum addressable RAM on a PC. (The 8088 addresses 1024K-bytes of memory, but the last 384K-bytes is reserved for functions other than user RAM.) Part of the 80286's appeal is its ability to address up to 16M-bytes of RAM. Accordingly, IBM enables you to increase the 512K-byte PC AT to 3M-bytes, in five allotments of 512K-bytes, at $US1125 for each expansion board.

Theoretically, products from third parties could boost RAM beyond 512K-bytes a board, which would enable RAM in the PC AT to exceed 3M-bytes. All this RAM is open to Xenix users, but apart from PC-DOS 3.00's Vdisk (RAM disk) utility PC DOS 3.00 function cells (on which application programs rely) cannot recognise more than 1M-byte of RAM.

None of IBM's memory expansion options includes the new (and still scarce) 256K-byte-by-1-bit RAM chips. All new memory expansion boards for the PC AT require a 16-bit slot.

## MANAGING MEMORY

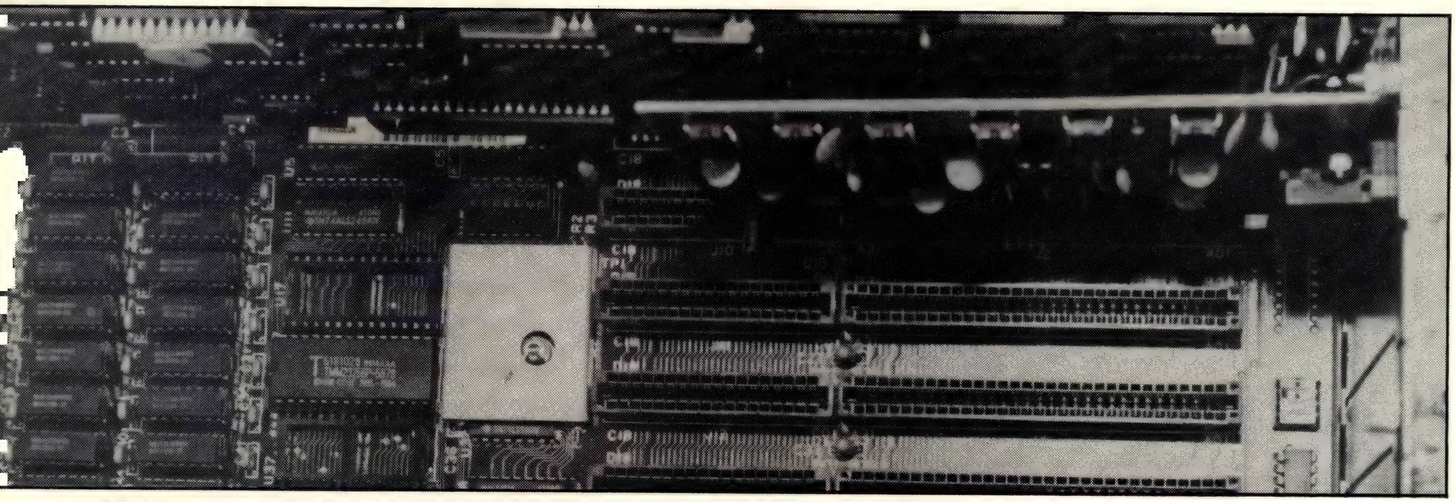
What will you do with all that RAM? The PC AT's capacity will initially encourage users to rely on multiple RAM disks, allowing them to bring software and data into memory and do processing without repeated floppy disk reads. This increase in speed will help in large database management applications.

But perhaps the major assignment in store for the PC AT's extended RAM is multitasking — the capacity for one machine to execute several jobs simultaneously. In this role, the 80286 shines.

When multitasking applications are assigned to a PC XT, for example, there are no hardware circuits to keep tasks separate, and applications can write over each other in memory. The 80286 partitions memory, essentially setting up fences between segments of RAM. In this case, good fences do make good neighbors.

The PC AT is also a multi-user machine. Its supply of serial ports initially limits it to three users — two at workstations and one at the host.

For the 80286 to serve multiple users and perform multiple tasks safely, the PC AT requires an appropriate operating system. Enter



**PC AT motherboard showing the expansion slots (right) with extended addressing capacity slots (centre).**

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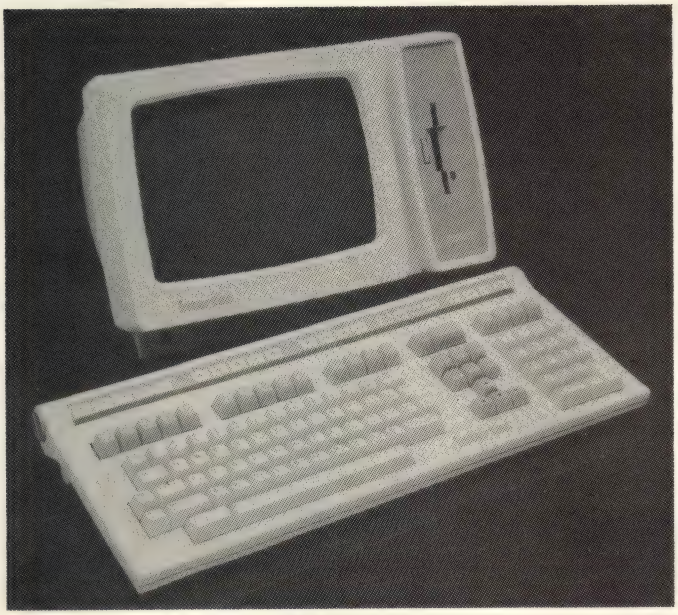

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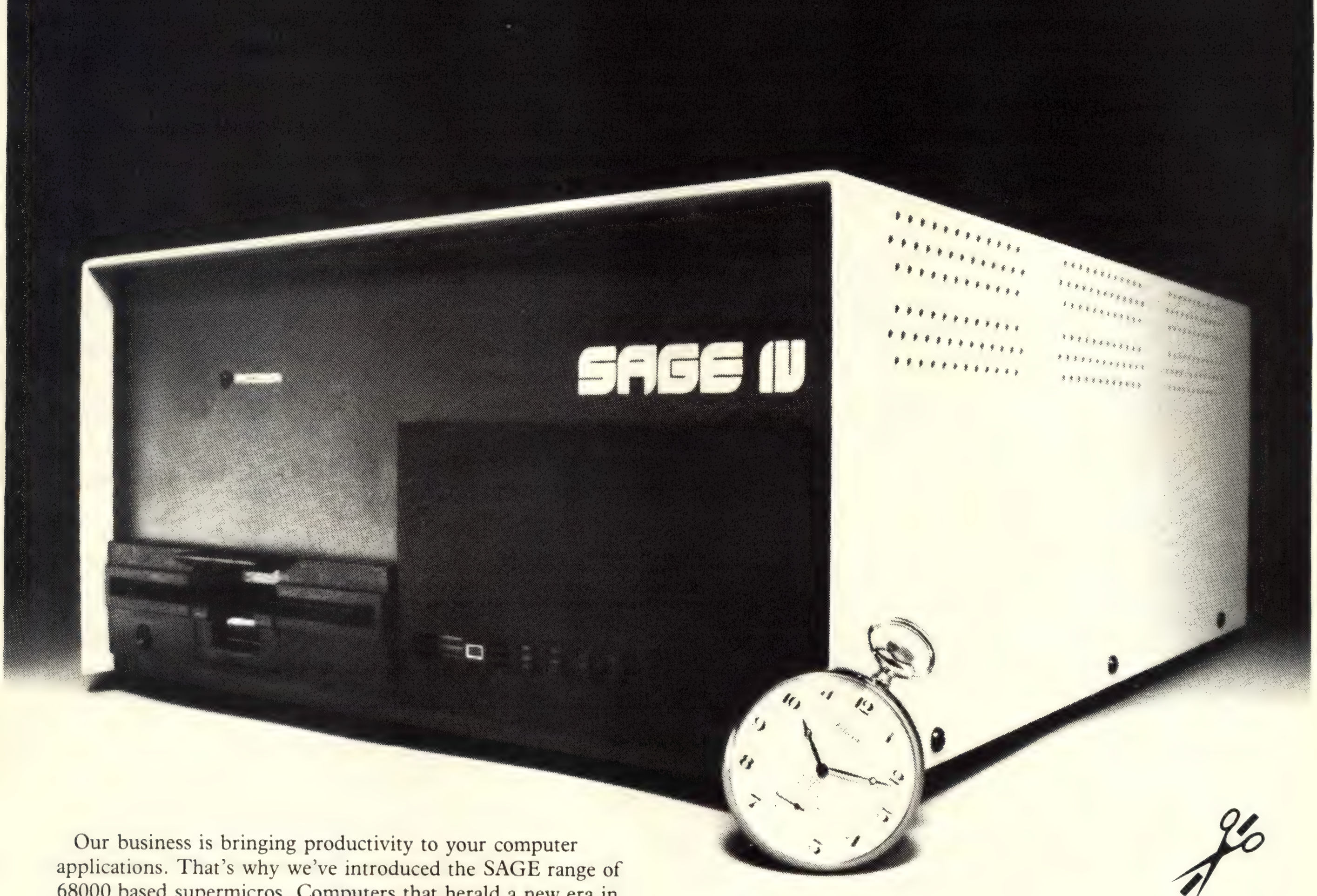

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2065.

IBM PC Xenix, a version of Unix System III adapted for IBM by Microsoft.

The 80286 is capable of operating in two modes. Under multi-user/multitasking Xenix, the chip works in the "protected" mode. When the PC AT runs under PC-DOS, the 80286 operates in the "compatibility" mode, so-called because the 80286 works with software for the 8088/8086 family of processors.

When you boot the PC AT, the operating system used determines whether the machine is in the compatibility or the protected mode. (IBM PC IX, a version of Unix for the 8088, runs on the PC AT in the compatibility mode.)

## THE PC AT AS SERVER

PC Xenix makes good use of the 80286, but the PC AT's multitasking/multi-user operating system won't be available until early next year. Applications written for Xenix may not be plentiful for quite a while, and with the PC AT initially supporting only three users simultaneously, IBM has only skittishly entered the PC-based multi-user market. Even if third parties load the PC AT with serial ports (which Xenix and the 80286 can handle), IBM has networking in mind.

When it introduced the PC AT, IBM unveiled its PC Network for resource and data sharing. The network places the PC AT at centre stage as a file server capable of simultaneously acting as a workstation. But, consistent with its emphasis on peer-to-peer (that is, PC-to-PC) communications, the PC Network accepts a PC XT or another hard-disk compatible as server.

In this way, the PC-based LAN enables the company to maintain a "PC philosophy". IBM, after all, is interested in selling and linking PCs, not ASCII workstations. While a true multi-user system shares processing power among users who typically rely on dumb terminals, the PC Network fosters file and hardware sharing among users equipped with processors of their own.

Early this year, IBM announced that its proprietary network to link IBM PCs, minis and mainframes would not be released for about two years. This ambitious network is based on a token-passing ring arrangement that relies on twisted-pair cabling. (In a token-passing ring configuration, computers are connected in a circle. A single token, or signal — representing the right to transmit data on the network — is passed around to each computer. Twisted-pair wires provide an inexpensive connection between computers and transmit frequencies over a single channel). Aware that market interest might burn out while the company fiddled, IBM released a version of a broadband PC-based network developed by Sytek, of California. (A broadband LAN links computers with a cable capable of rapidly carrying many signals at once). IBM claims the PC Network can easily be installed in a small business.

***The network places the PC AT at centre stage as a file server capable of simultaneously acting as a workstation.***

The network consists of the kind of coaxial cable used for cable television, a $US695 network board for each PC, and a $US595 translator unit for each network. The translator, which converts the incoming signal to a frequency that all network adapters can receive, is connected by cable to as many as eight PCs in a 60-metre radius. Connecting more than eight PCs or extending the radius requires a Base Expander, essentially a repeater that boosts the signal.

The PC Network can link as many as 72 PCs within a 300-metre radius. This is achieved through the use of Base Expanders and Short, Medium, or Long Distance Kits (which include cables and connect up to eight PCs). IBM claims that, with the addition of third-party hardware and installation help, the network supports a maximum of 1000 nodes within a 4.5km radius.

Data is transmitted throughout the network at a rate of 2M-bits/sec via the CSMA/CD (carrier sense multiple access with collision detection) protocol. (CSMA/CD is a common networking technique in which a micro sends a packet of data only when the network is quiet. If two micros send a packet at the same time, each will recognise that the packets have been scrambled, then will alternately check network traffic before resending.)

From PC to PC, the data transfer rate is 200K-bits/sec. By using coaxial cable to transmit a broad band of frequencies, the PC Network can send voice and video as well as data.

## NETWORK ON BOARD

The heart of the network is the board, made by Sytek to IBM's specifications. The board fits into an 8-bit slot in any member of the PC family except the PCjr and the PC Expansion Unit. The adapter includes a pair of Intel coprocessors, the 80188 and the 82586, which operate at the same 6MHz rate as the 80286.

The 80188, which incorporates the 8088 and support chips into a single unit, works with a 32K-byte ROM module on the board to manage the network (including power-up, protocol processing, error detection, and transmission). The 80188 also governs the 82586, which controls communications with the network via an RF modem on the board.

An 8K-byte ROM module, the NetBIOS, serves as the basic input/output system between the network and the host PC. The software on the network board generates menus. The board also includes 16K-bytes of RAM, set aside as a buffer. IBM released the board in August, hoping that software developers would write applications directly for the NetBIOS.

## ANOTHER DOS

PC Xenix doesn't support the PC Network, but PC-DOS 3.10 does. When it is released, PC-DOS 3.10 will replace PC-DOS 3.00 but not PC-DOS 2.10. PC-DOS 3.10, which IBM says will be available as a trade-up option for $US30, is 3.00 plus support for PC Network hardware and software. PC-DOS 3.10 will work with all members of the PC family (expect the PCjr) and will occupy the same amount of memory as PC-DOS 3.00.

PC DOS 3.00 has file-sharing capabilities (via the Share command) but lacks 3.10's network "redirector" facility which intercepts application program calls (such as those for disk or printer services) and redirects them into the network as required. The redirector also fields responses from the network and passes them to the application program.

The PC Network requires LAN software as well as that etched in ROM. The PC Network Program, priced at $US75 and scheduled for release around the same time as PC-DOS 3.10, will provide server capabilities for file, print and message functions.

The PC Network Program will use PC-DOS 3.10 to share resources and information among PCs. Most applications running under PC-DOS are expected to work with the server functions.

## A NEW PITCH

The PC AT is among IBM's most complex small machines, and gaining mastery of its standalone and communications characteristics may entail a lengthy learning process. And when users have learned those characteristics, there's room for further expansion.

IBM Australia has not yet announced the release of the PC AT. However, Computerland stores have received systems from their US parent in anticipation of an announcement.

---

*Ken Greenberg is an assistant editor at US PC World, Karl Koessel is the magazine's technical editor.*

# PC-DOS 3.0

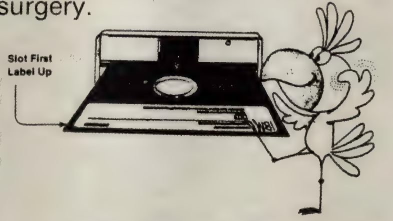
AN ENHANCEMENT of Microsoft's ever-popular PC operating system, PC-DOS version 3.0, was launched in the US as part of the long-awaited PC AT release. Although considerably overshadowed by the AT's awesome hardware specifications, this vital piece of systems software is worth examining in its own right.

Substantial changes are incorporated into PC-DOS 3.0, which represents a cornerstone of IBM's upward compatibility policy for the PC family. While the changes are not quite as dramatic as those introduced by its predecessor (PC-DOS 2.0), they are nevertheless important and evolutionary. These changes include software refinements that take advantage of the AT's expanded user memory capacity, real-time clock/calendar and high-capacity 1.2M-byte floppy disk drives.

Other PC-DOS 3.0 enhancements include VDISK (a virtual disk option similar to those bundled with most multifunction boards), file sharing, disk block locking and additional INT 21H function calls. Improvements have also been made to several standard PC-DOS features, such as print spooling, error reporting, volume labelling and the linking of files generated by assemblers or compilers.

The LINK utility can support complex programs of up to 1M-byte. The VDISK utility will also support extended memory above 1M-byte for virtual disk space. Basic 3.0 is modified to support the AT hardware enhancements, and additional access has been provided to link to device drivers and PC-DOS itself. The print spooler and screen dump utilities have been modified to support extra display interfaces and printers, such as the new IBM color printer.

The PC-DOS 3.0 package comprises two disks (DOS and Samples), the usual ring-bound reference, a user's guide, an application setup guide and a reference card, as well as upgrade offers for Basic 3.0 and PC-DOS 3.1 (when it arrives next year). Even IBM's staunchest critics would have to admit that the standard of the documentation supplied with PC-DOS 3.0 is nothing short of excellent. Each document is now bound in IBM-blue, rather than the old buff color previously used for PC systems software. The outer library binder has also undergone extensive cosmetic surgery.



In fact, the quality of the documentation only goes to prove that both the PC AT and PC-DOS 3.0 have been around for quite a while, at least in prototype form. Many may feel that the approach taken seems rather childish, with copious use of colorful cartoon characters throughout. Nevertheless, it must be assumed that IBM knows what it is doing, and is not afraid of being accused of talking down to its users. (Keep in mind that PC-DOS 3.0 is available for the entire PC range, including the PCjr, which appears to be enjoying a new lease of life since its recent facelift).

When loaded, the resident portion of PC-DOS 3.0 requires a minimum of 36K-bytes of RAM, 12K-bytes more than PC-DOS 2.0 and 24K-bytes more than PC-DOS 1.1! Much of this extra code consists of networking routines scheduled for incorporation into PC-DOS 3.1, once debugging is complete, but that is another story . . .

**Ian Robinson**

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- Built-in 1-2-3™ from Lotus™
- Built-in Wordprocessor
- Built-in Terminal utility
- 1–2 weeks use from each battery charge

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*The PORTABLE* features built-in software. There's 1-2-3™ from Lotus™ for spreadsheet analysis, information management and graphics. And P.A.M. (Personal Applications Manager) to easily start application programs, manage files, or change *The PORTABLE's* configurations. Even MemoMaker is built into ROM for instant word processing.

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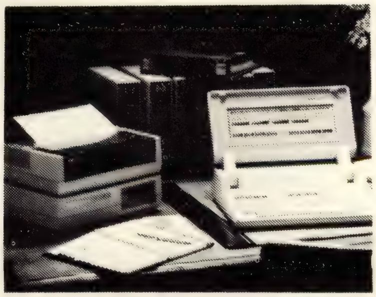
### Portable

*The PORTABLE* weighs under 4 kg and is about the size of a three-ring notebook. With average use, it will run up to two weeks on rechargeable batteries. It can also be plugged into AC power. *The PORTABLE's* special CMOS design provides the longest battery life available and even retains data when the computer is turned off.



Battery-operated peripherals include the whisper-quiet Think-Jet printer and powerful HP9114A microfloppy disk drive with 710 Kbytes of formatted storage. At 2½ kg each, they add lots of system power with little weight. The entire system – *The PORTABLE* and peripherals – weighs about 9½ kg.

### Compatible

Because *The PORTABLE* offers the same functionality, applications, and user interface as desktop computers, it operates in exactly the same manner. This means you won't have to learn special operating procedures. A communications option called Portable-Desktop Link makes transferring information to and from other personal computers convenient and fast. If you want to share data or peripherals with the HP150, the IBM PC, or other popular personal computers, *The PORTABLE* can do it. Whether they're in your office, at your client's, across the hall, or around the world. Now that's compatible!

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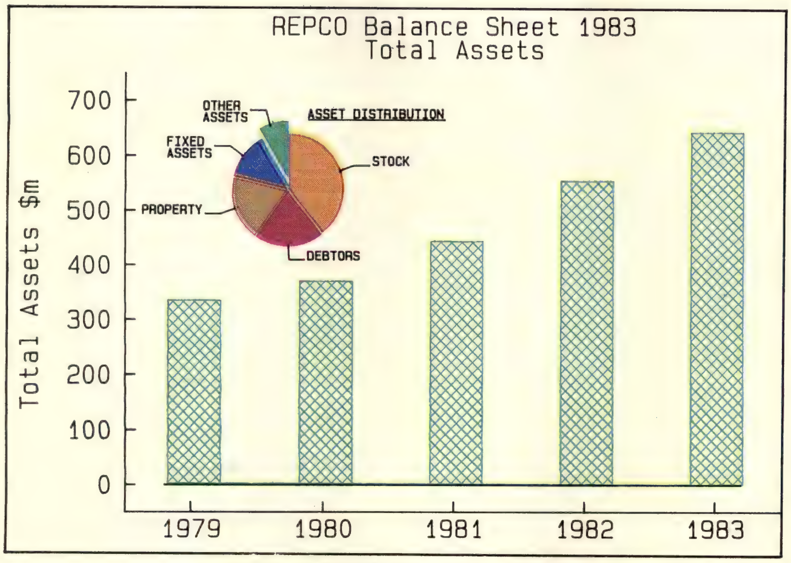

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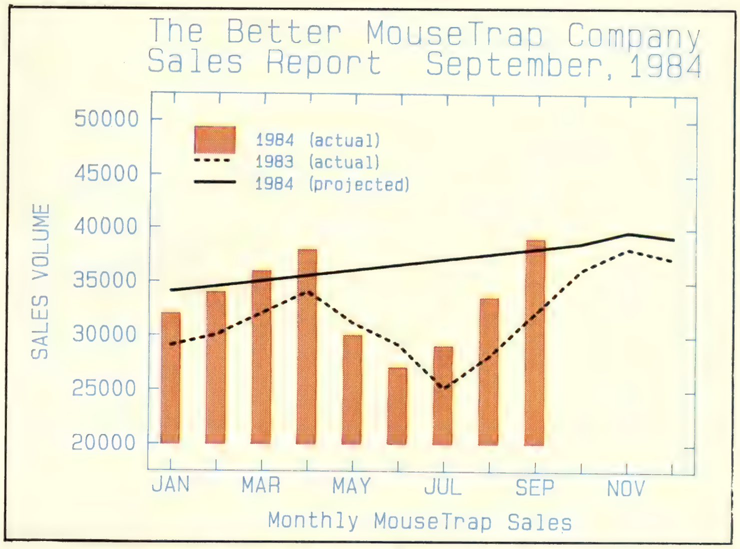
**Graftalk is easy to use**
Even a first time user can produce a sophisticated graph with a few simple commands. As you gain more experience, you can choose to use any of GrafTalk's more than 100 commands. Commands are available that allow all degrees of "fine tuning" for your graphs.

**GrafTalk has excellent documentation**
GrafTalk's documentation is readable, complete and easy to use. The User's Manual consists of full color examples designed to show you step-by-step how to produce the graphs you want. The Reference Manual classifies and describes fully every available command.

**Chances are it works with the hardware you already have.**
GrafTalk runs on CP/M-80 systems (even those without screen graphics), the IBM-PC, Sirius, DEC Rainbow, Zenith Z100, and many more. 16-bit systems need only 128kB of memory.
GrafTalk drives so many screens, plotters, and printers that we don't have room to list them all. Development is continuing — watch for the release of support for Apricot and the Textronic color ink-jet printer.

(Charts shown here were produced with Houston and Hewlett-Packard plotters, on a Televideo 803.)



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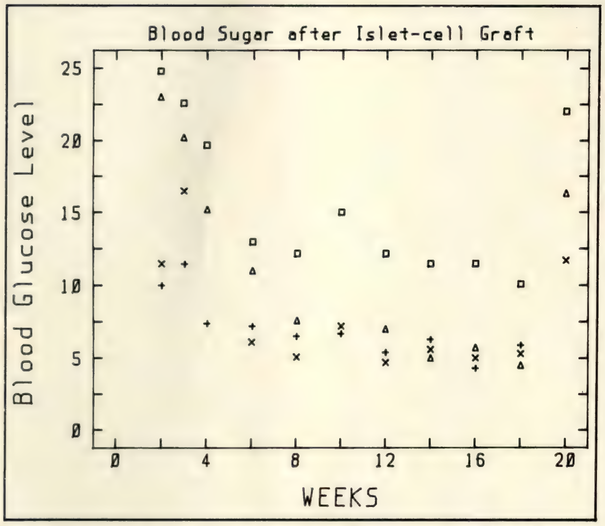
# Features of GrafTalk

**Flexible Data Input**
GrafTalk will extract data from any text file, including Printer files from most spreadsheet programs. Blank lines and headings are ignored. Unwanted data can be easily masked off. Commas, dollars signs etc do not affect the interpretation of data values.

**Mini Spread Sheet**
The inbuilt spreadsheet allows the user to view and adjust data, perform arithmetic operations, create new rows and columns, name rows and columns,create sub-sets, and output data to disk or printer. Unassigned values are allowed.

**Menu Mode**
High-speed screen oriented menus are provided. Write your own menus for your standard operations. Switch between menu mode and command mode at any time.



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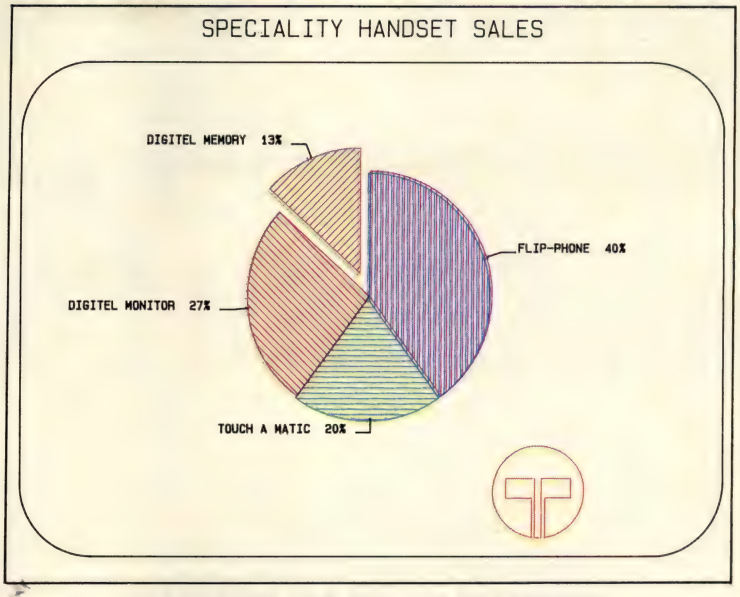
**Axis Features**
Adjust the number and position of axes. Select numeric labels, or text or special labels such as months, days or years. You can use automatic scaling, or nominate the range for each axis.

**Interactive Graphics**
Use the joystick, mouse, or light pen to select a region on the screen, and position legends and text.

**Advanced Features**
Declare variables, interactive sketch commands, circle and arc, absolute and relative moves, draws and marks, screen or graph coordinate systems.



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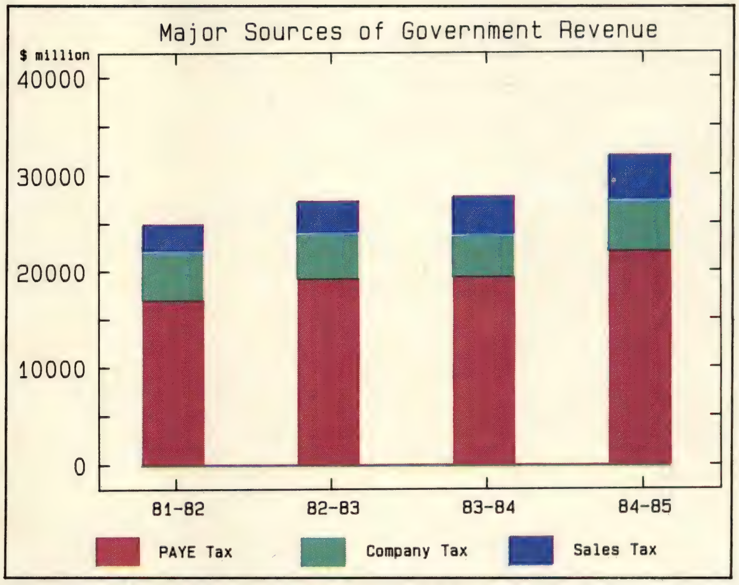
The powerful screen-oriented text editor within GrafTalk is a very valuable tool for developing graphics. It can be used to create files containing commands, data or both. The editor has commands to allow you to run all or part of a file. If errors are found during execution, GrafTalk returns to the editor, with the cursor pointing to the offending line.



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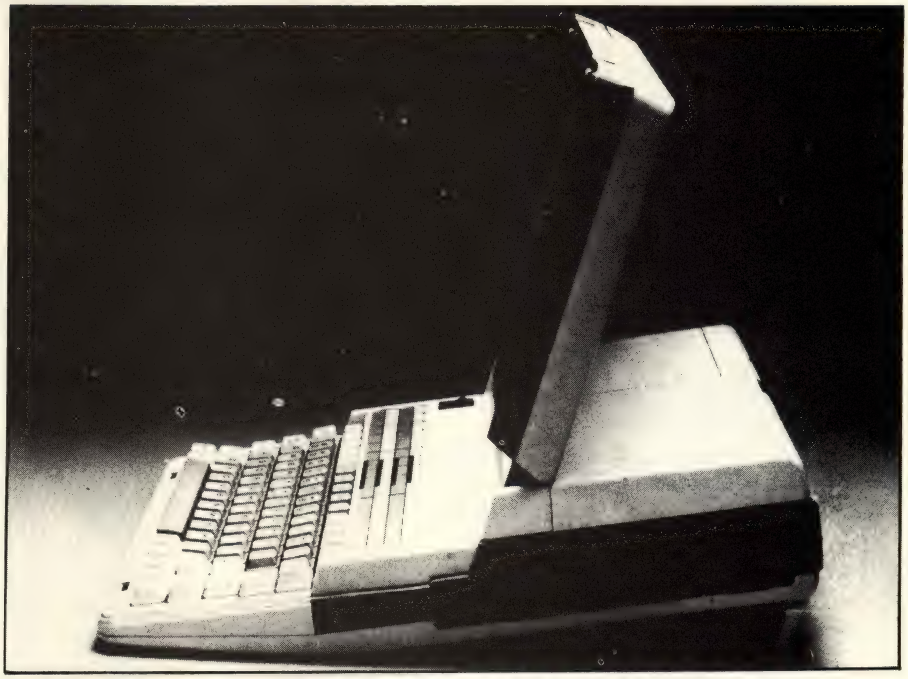
# PC in a Briefcase

DATA General Corp has unveiled an IBM PC-compatible portable computer that is smaller than a briefcase, yet is claimed to perform all the functions of larger, heavier desktop personal computers.

Dubbed the Data General/One Personal System, the model is claimed to be the industry's first portable personal computer to incorporate a "full-size" LCD screen capable of displaying text and graphics with the resolution and character proportions of a conventional computer terminal screen. Features include a 25-line by 80-column flat display screen; bit-mapped display with 640- by 256-pixel resolution allowing use of graphics applications; up to 512K-bytes of user memory and up to two 3½in disk drives with 737K-bytes capacity each; and a full-size, full-function keyboard with 79 keys.


The Data General/One includes a "full size" LCD screen.

The company will also offer an IBM PC-compatible expansion chassis for the portable. The chassis will accept up to five expansion cards, providing users with extra system features such as color and monochrome terminal support and memory expansion. The chassis can be configured with an integrated 5¼in floppy disk drive, and space is provided for a 5¼in Winchester hard disk.

Optional features include a 300 bit/sec modem said to enable a user to plug it into a standard telephone jack for communications to other computers or public databases.

The Data General/One also runs Digital Research Inc's CP/M-86 and Venturcom's Venix (A microcomputer version of AT&T's Unix). About 70 *applications programs* are available in 3½in formats, including 20 popular business packages, the company says.

Among programs being offered are Lotus Development Corp's Lotus 1-2-3 and Symphony; Ashton-Tate's dBase II; MicroPro International's WordStar and WordStar Professional; Microsoft's Multiplan, Word and GW Basic; Digital Research's Level II Cobol, C, PL/1, and Pascal/MT; Software Arts Inc's TKSolver; Software Publishers PFS: Report, PFS:Graph, PFS:Write and PFS:File; Alpha Software's Data Base Manager II; Lifetree Software's Volkswriter Deluxe; and Microstuf Inc's Crosstalk.

Data General also introduced The Ceo Connection, a $US295 package said to give Data General/One users access to the vendor's electronic office system.

The Ceo Connection package reportedly allows user-transparent file transfer and document conversion between Data General's Ceo software and selected MS-DOS word processing documents and spreadsheet packages running on the portable. Ceo Connection is also said to enable the microcomputer to act as a Data General terminal running Ceo software and other Eclipse MV/Family applications.

An optical $US899 standalone desktop 5¼in floppy disk drive allows the new DG portable to run off-the-shelf IBM PC software, the company says. Packages on 5¼in disks which are not copy-protected reportedly can also be downloaded to the Data General/One.

The machine is based on Harris Semiconductor's 80C88 chip, a CMOS version of Intel Corp's 8088 microprocessor. Using 3½in disk drives and CMOS technology, the portable's design minimises power consumption, Data General says. An optional $US79 rechargeable battery pack is said to allow users to work at remote locations for 8-10 hours. A battery recharger costs $US99.

The basic system, which includes 128K-bytes of memory and one disk drive, costs $US2895. Each additional disk drive or additional 128K-bytes of memory costs $US599. The optional 5¼in disk drive, which allows popular programs to be downloaded to the system, costs $US899.

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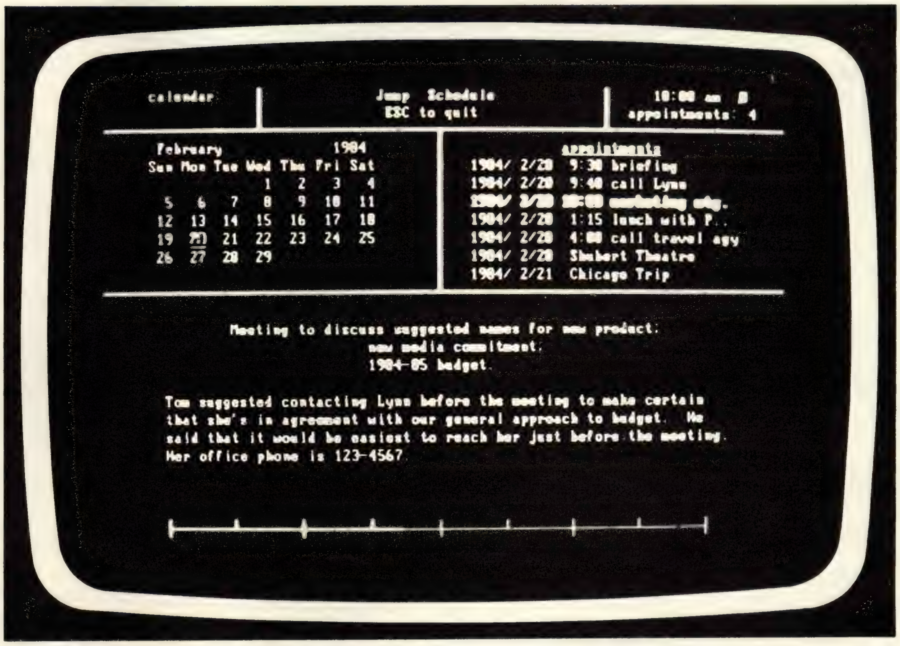
# Organising Life's Interruptions



```
calender           Jump  Schedule                 10:00 am  B
                   ESC to quit                 appointments: 4

 February           1984           appointments
 Sun Mon Tue Wed Thu Fri Sat   1984/ 2/20  9:30 briefing
                  1   2   3   4   1984/ 2/20  9:40 call Lynn
  5   6   7   8   9  10  11   1984/ 2/20 10:00 marketing mtg.
 12  13  14  15  16  17  18   1984/ 2/20  1:15 lunch with P..
 19  20  21  22  23  24  25   1984/ 2/20  4:00 call travel agy
 26  27  28  29               1984/ 2/20  Shubert Theatre
                              1984/ 2/21  Chicago Trip

        Meeting to discuss suggested names for new product:
                       new media commitment:
                          1984-85 budget.

 Tom suggested contacting Lynn before the meeting to make certain
 that she's in agreement with our general approach to budget.  He
 said that it would be easiest to reach her just before the meeting.
 Her office phone is 123-4567.
```

**Desk Organiser from Warner Software.**

YOU ARE likely to be interrupted while reading this article. The phone may ring or you may need to check your calendar. As office automation experts like to say, your life is "interruptive".

It is for this reason that publishers are bringing a new breed of software to the market — packages that will allow computer users to interrupt whatever they are working on and use the machine as an automatic telephone dialler, a calculator, or a number of other desktop accessories. Because the user can switch among these tools at will, this new software is often referred to as concurrent utilities.

One such package is Spotlight by Software Arts of Massachusetts, the maker of the VisiCalc spreadsheet. The product, announced last month, allows an IBM PC user to interrupt whatever program is running with only one or two keystrokes. Among utilities then available are an eight-page "notebook" that allows the transfer of text from one file to another, a Rolodex-type file manager, a calculator, and a clock. The package will cost $US100 to $US200.

The idea of putting such a set of commonly used desk tools on the screen is not new. Apple's Lisa gives its owners a real taste of a single-user, multitasking microcomputer. It contains a calculator, notepad, and other desktop utilities in read-only memory that can be used at any time. The Macintosh contains a similar set of functions in its read-only memory.

One of the first efforts to make the IBM PC somewhat multifunctional has produced a low-cost set of concurrent utilities called Sidekick. For $US50, users can add a calculator, notepad, appointment calendar, auto-dailer, and ASCII reference table to many IBM PC programs. All these functions are available in overlapping windows when the user presses two keys.

"Sidekick was a product we developed initially for internal use," Philippe Kahn, president of Borland International, of California said. "We realised it was a natural. In the absence of multitasking systems, we though this was a good idea for a product."

That is an understatement. When the product's existence became known, it became so popular that conversation about it on CompuServe's PC special interest group bulletin board reached fever pitch (somewhat inspired by Kahn's presence on the bulletin board). Users were so enthralled with Sidekick that they began to post on the bulletin board a method of illegally copying the program.

"We thought low-cost software would prevent software piracy," Kahn says. "But someone uploaded a patch to uncopyprotect the package."

Borland now offers an unprotected version of Sidekick for $30 above the standard price — and CompuServe has reprimanded its users who advocated purloining the program. "There's still a tremendous amount of conversation going on about Sidekick," CompuServe IBM PC special interest group system operator Mike Todd said.

Todd uses Sidekick and thinks the program is especially useful for people who spend a lot of time communicatiing over telephone lines. "If you're on line with someone, you can call up Sidekick and save a screen of text or pull up a calendar without logging off (the service). You can also throw out your pad and pen."

Sidekick resides in a specially partitioned sector of RAM. A user calls up Sidekick by pressing two keys. The program offers seven single-function pop-up windows that overlap each other on the screen but can only be used one at a time.

The user can configure Sidekick to exclude unnecessary functions in order to conserve memory. When the program is no longer needed, one keystroke sends it back into its hiding place.

Sidekick is not the first program to offer simulated concurrency. Various utilities have been around for a while to partition a section of RAM for special purposes. Warner Software of New York has been offering a package with concurrent features for almost a year. At $US295, Warner's Desk Organiser is really

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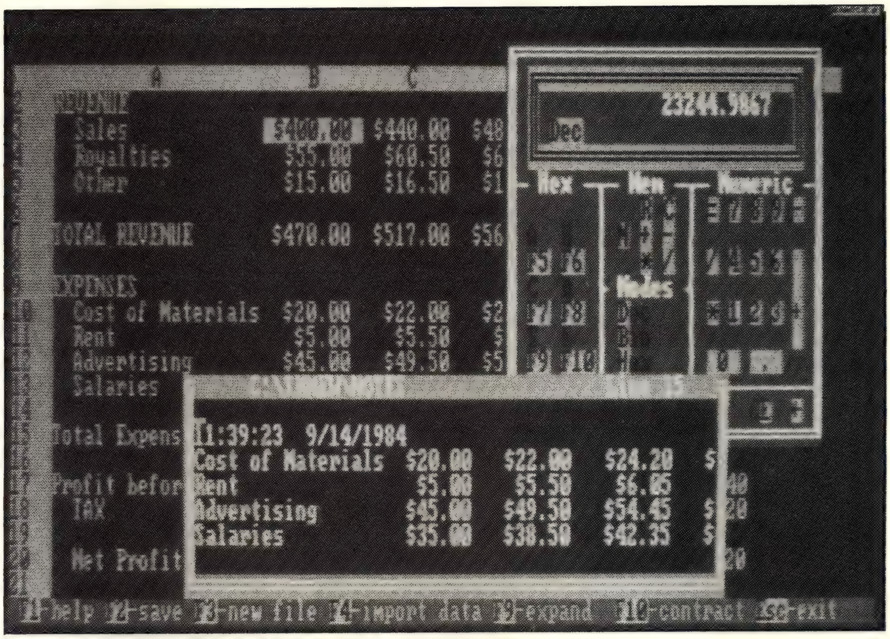
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Dec
Hex
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Modes
F1-help F2-save F3-new file F4-import data F9-expand F10-contract Esc-exit

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REVENUE
  Sales              $400.00  $440.00  $48
  Royalties           $55.00   $60.50  $6
  Other               $15.00   $16.50  $1

TOTAL REVENUE        $470.00  $517.00  $56

EXPENSES
  Cost of Materials   $20.00   $22.00  $2
  Rent                 $5.00    $5.50  $
  Advertising         $45.00   $49.50  $5
  Salaries

Total Expens
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  TAX

  Net Profit
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Cost of Materials  $20.00   $22.00   $24.20
Rent                $5.00    $5.50    $6.05
Advertising        $45.00   $49.50   $54.45
Salaries           $35.00   $38.50   $42.35
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Sidekick offers notepad, calculator and calendar.

more of a full-blown software package than is Borland's collection of utilities.

Desk Organiser has a file manager, auto-dialer, word processor, calculator, alarm clock, and notepad for easy text transfer between files. Its Meta function allows users to jump from Desk Organiser to almost any other software package and back again.

"The fundamental reason behind concurrency is to get more use out of your computer," Richard Sarnoff, director of software development for Warner said. "A computer may be used only two or three hours a day now. But using the calendar, notepad, and other functions, people can leave the machine on all day and make it the focus of their desk."

Desk Organiser, unlike Sidekick, doesn't run under PC-DOS, the IBM PC operating system. Instead, the machine's operating system runs under Desk Organiser's proprietary operating system, so users could also load CP/M-86 and any applications that run under that operating system.

One of the biggest potential problems with the concurrent utility packages is their interaction with PC-DOS. The IBM PC was not designed to let proprietary operating systems wall off parts of its RAM for special purposes. Developers of these packages don't have any clear documentation on how to do it from Microsoft, the creator of PC-DOS, Kahn says.

Although the execution of these packages is not always perfect, the idea is greeted with enthusiasm even by competing software companies. The reason for the excitement is that even simple, inexpensive programs, such as those in Software Publishing's PFS line, can gain popular functions at little additional cost. Concurrent utilities make other simple packages look more attractive.

Some even predict that add-on concurrent utilities may displace integrated packages, if the utilities' developers integrate features such as spreadsheets and database managers with the packages. Because of the nature of concurrent utilities, these extra features could be used with any other program, so the user wouldn't have to learn new sets of commands for each piece of software.

The future for concurrent packages seems bright. With at least three on the market and more on the way, users may find themselves awash in new concurrent utilities such as pop-up word processors or communications packages. m

# PORTA PAK COMPUTER

# ...other computers cringe

PortaPak comes with its sleeves rolled up. It was designed in Australia to get the most work done in the least time and at the lowest price.

If you want results, sheer computing power, trouble free performance, then PortaPak is the only choice. If you want prestige, if you need to stroke your corporate ego, we suggest you buy something else. Something that costs more, isn't as powerful but has a lot of "image."

Put PortaPak up against imported machines costing $5000, $6000 even $7000. The other machines cringe with embarrassment.

PortaPak has 800K of formatted space on each disk drive. The expensive machines which boast about having 360K suddenly look rather silly. With PortaPak you'll be able to handle much bigger data files and have far more programs on hand without having to fiddle around changing disks.

Reliability is often thought of in terms of machine breakdowns. Nowadays, the big problem isn't with breakdowns it's with hangups – when your machine turns out to be incompatible with your software. This is an enormous, widespread problem.

It's why we teamed up with Australia's software geniuses – Software Source Pty Ltd, the top suppliers of business and professional programs in the country. First, they specially customized PortaPak's operating system so it works with exceptional speed and simplicity.

Then they customized all their CP/M products to run perfectly on the PortaPak – products like dBASE II, SuperCalc, all the major languages, accounting systems, etc. Most importantly, they stake their reputation that all these products will work without hitches. No other computer in Australia can offer this total software support.

As for electrical and mechanical reliability, look inside a PortaPak. There's a striking difference. The PortaPak is completely modular. We didn't scrimp by putting all the circuits on one board. We use *three*. Servicing is simpler, quicker and cheaper. It's why the leading national computer service company, TCG Pty Ltd, is pleased to offer a 12 month service contract on PortaPak in all capital cities.

Take an extra close look at the Canon disk drives. If Rolls-Royce built computers, they'd use Canon drives. See the massive head protection shield? Hear the way the heads lock away every time they deselect? The designers had an unusual attitude to reliability – fanatical.

Now carry out some speed tests. On a standard benchmark test using BASIC routines*, the timings are: PortaPak 12.9 seconds, IBM PC 16.4 seconds, NEC APC 19.7 seconds and Sirius 16.4 seconds. Using a standard dBASE II routine**, the timings are: PortaPak 8 minutes 11 seconds, IBM PC 11m 52s, Sirius 17m 9s and NEC APC 19m 16s.

The expensive imports really cringe at this because they make so much of being "16-bit" machines. PortaPak is an 8-bit machine and proud of it. Not only is an 8-bit machine inherently better suited to jobs like word processing, accounting, spreadsheets, etc, but the 6MHz clock rate ensures it can run rings around the others even in complicated mathematical tasks.

Now to really rub it in, look at PortaPak's stunning additional features:

- Compact portability. It needs only half the desk space of its nearest rival. It goes with you on business trips, at night, on the weekend. *In one hand, you hold the concentrated working power of an entire office.*
- 9-inch screen, 80-characters wide but with 35 lines instead of 24. You see more of your work and the characters are the normal shape – not elongated. Much more readable.
- 640 x 304 high resolution, dot addressable graphics.
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- Universal terminal emulation lets your PortaPak mimic the screen handling of other computers and run the programs installed for them. Your PortaPak can act as a terminal for any computer you care to name.
- Ability to read and write to other 5.25-inch disk formats – e.g. Kaypro and Obsorne. Lets you exchange software directly with owners of different computers.
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For the name of your nearest PortaPak dealer contact:
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*See Australian Personal Computer, Feb., 1984.
**See Australian Micro Computerworld, Nov., 1983.

**THE PORTABLE COMPUTER CO.**

**The past 12 months have seen a number of changes in the local microcomputer manufacturing industry. Tony Smith and Chess Wade consider the experiences of companies which have bought Australian products and review 36 manufacturers.**

# The Sunrise Strategy of BUYING AUSTRALIAN

JUSTIFICATION for an Australian computer manufacturing operation is generally based on one of two fundamental premises: import replacement or international niche markets.

For import replacement to really work, there has to be a conscious "buy Australian" policy which will, other things being almost equal, lead to major purchasers choosing a local product in preference to an imported competitor. There is little evidence that even the best efforts of the Federal Department of Science and Technology and certain sections of the media have had any real effect in establishing such an Australian preference mentality.

However, the most successful local manufacturers have still been able to base much of their business on what could only be considered import replacement because they offer at least one of two advantages over their imported competitors: they are often significantly technically superior and they are considerably more responsive to the detailed requirements of major Australian clients than any importer.

One of the largest markets for Australian computers has been education.

The West Australian and Victorian Education Departments selected Australian computers as preferred equipment for schools, and both departments say the machines were not selected simply because they were Australian.

But they agreed that buying Australian had its advantages, and that the machines were selected because they were the most suitable for their particular application. Graeme Inchley, senior computer education officer for the Victorian Education Department, said the Pulsar system recommended for use in Victorian schools was selected on "its merits". The fact that it was Australian had "no influence at all" on the decision to make it preferred equipment, but the department was "certainly delighted that had occurred," he said.

"The Pulsar machine was a system solution offering system and application software and performance at a price," he said. Nonetheless, Victoria's decision proved to be the right one, Inchley said. "We are even more delighted with the decision now than we were when we selected the system," he said.

Pulsar is developing a system based on the Victorian government's requirements. Delivery is expected early next month. The Pulsar system, based on the TurboDOS operating system, will be a multiuser machine. It is used mainly in Years 11 and 12 education, and also in government administration.

The WA Education Department chose the Microbee in November of 1982. But its being made in Australia was "not a major consideration," according to Jim Sully, the superintendant for schools computing for the WA Education Department.

The system may be reviewed at the end next year, an extension of the normal period of two years for recommendations. The WA Education Department is doing this because it is happy with the Microbee's performance. The Microbee was "the most cost-effective solution in our State".

Both departments have fairly extensive selection procedures, and each machine was selected from a long list of submissions. The Pulsar was selected from 100 submissions presented by about 85 companies, and the WA department selected the Microbee from submissions from about 120 suppliers around Australia. Some exhaustive tests and checks are made to ensure a right decision has been made.

One Labtam customer, Farley Manufacturing, of Victoria, also said the Labtam machine was not selected purely because of its Australian origin. Farley Manufacturing manufactures flame-cutting systems (like an XY plotter except it cuts sheet metal) and the Labtam is used as a user interface between the industrial controller and the flame cutter.

According to Ian Streep, software engineer for the company, the Labtam was selected because "at the time the decision was made, it was technically advanced and cost effective". That point was important, he said, but the fact that it was an Australian machine was not a major influence. The company thinks highly of the machine, and its multiprocessor, high graphics design.

Streep said that, because the machine was originally designed with industrial applications in mind, Farley's expectations of a computer system did not differ greatly from Labtam's own.

The machine had been reliable and, although it was not particularly elegant, it was technically better than most, Streep said. Nonetheless, "there would have to be a pretty good reason for us to change now". Unfortunately, Labtam has had problems obtaining new software and manuals from the US, but Streep said Labtam could not be blamed for this.

Because of Labtam's reputation, its machine was well suited to the Australian market for Farley, Streep said. But if the company was selling its product overseas, it would probably use the IBM PC, as Labtam was hardly known elsewhere, and support could be a problem, he said. Local support and technical assistance from the manufacturer is obviously an advantage to a quantity buyer of computer systems.

Happily, support from Australian manufacturers appears to have been quite good for all three involved. Inchley said, however, that his department has not had a great deal of experience in this particular field. "Accordingly, we cannot compare service with overseas suppliers," he said. "All we can suggest is that the service from Pulsar has been excellent, and that Pulsar has even modified equipment to suit our needs."

Jim Sully said he was "fairly happy" with the support from Applied Technology. "I believe support would be more difficult to get from overseas suppliers," he added.

Ian Streep said: "Labtam has a fairly good name for reliability, and the company was not too far removed from its small origins. The company provides local backup and support, and is co-operative generally," he said.

A company which believes it was

one of the first commercial users of Labtam's 3000 machine is generally happy with it and the support.

According to Peter Grace, manager of agency systems at National Mutual, the fact the machine was manufactured locally was not a "critical factor".

But the decision had its advantages, he said. "The fact that it was manufactured locally meant it was possible to get in touch with the manufacturers rather than a dealer or agent."

But there have been problems.

"Labtam is struggling to cope with its growth, and they tend to concentrate on who shouts the loudest."

Labtam was "certainly responsive", he said, but sometimes the company seemed to forget that National Mutual was still there.

Frank Jackson, National Mutual's agency system support, said NM had 18 machines installed, six of which were being used for demonstrations.

National Mutual has a standing order with Labtam for the supply of six machines per month until the end of the year, Jackson said.

Jackson said it had been advantageous to be close to the machines' manufacturer and to be able to discuss problems with the designer.

And, within obvious restrictions, Labtam was flexible enough to manufacture to specification.

When a microcomputer company folds, particularly a small company, it is usually hardest on those faithful people who actually bought the product land who are now left "high and dry".

The manufacturers of the Excalibur computer system, BGR Computers, folded recently, leaving about 400 users "marooned".

According to one Excalibur user, BGR "never seemed to be actively supporting the machine".

There was a "total lack" of support from BGR, this user said, and he hated looking at advertisements for "inferior" machines that were much better supported.

The Excalibur was "the best 8-bit micro he had ever seen", he argued.

The machine has direct RGB output, high resolution (640 x 288) color graphics ("best in the 8-bit market"), a Z80 running at 4MHz, 64K-byte RAM chips, runs CP/M 2.2, and has storage capacities of 780K-bytes from 5¼in drives or 1.3M-bytes from 8in drives.

The system uses DMA disk access and one of the latest floppy disk controllers chips. Indeed, proprietary chips are used throughout.

The user said 95 per cent of Excalibur owners were happy with the machine. "The machine has the capability to make it internationally, but support was the problem. As there are only about 400 machines around, it is not a lucrative market for software suppliers".

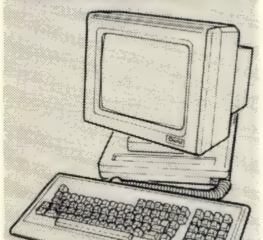
Since Kinetic Systems had begun supporting the machine, support had improved considerably.

"On the whole they (Kinetic Systems) are quite supportive. It allows the use of its premises for the user group meetings, and has discounted hardware.

"Software support is lacking, but the user group makes up for that".

The user, who describes himself as a "hacker", is so impressed with the Excalibur that he has two of the machines.

Sigma Data also offer one of the world's best terminals.



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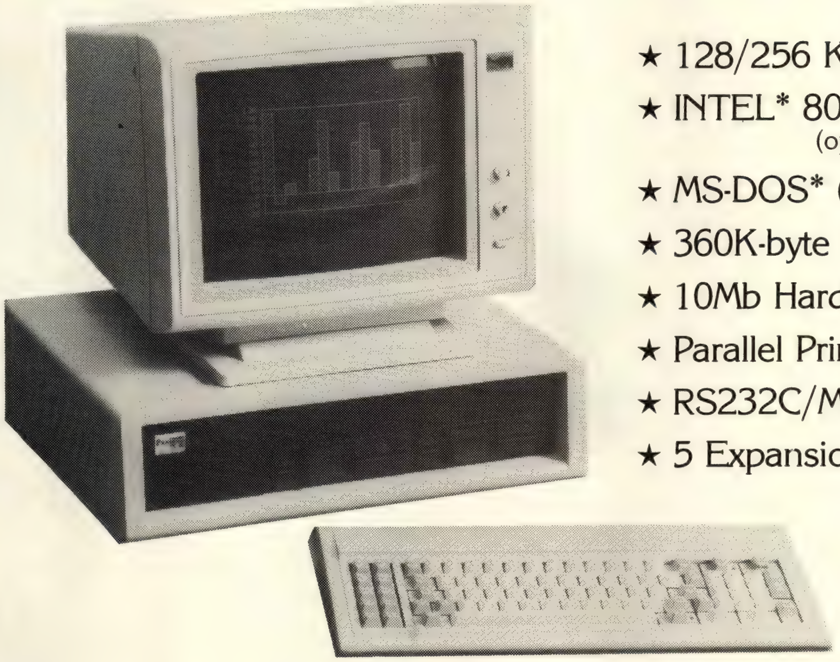

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## ...the cost effective IBM* compatible

The PANTEK CAF-PC-16 is the acceptable alternative to the IBM PC. It's loaded with standard features — like its on-board parallel printer and RS232 ports, dual slimline 360K-byte disk drives and mono display adapter card . . . and it is COMPATIBLE. Add to all this the remarkably low cost of the PANTEK PC and you have the best "value for money" PC package available today.

We also offer a wide range of optional features . . . such as an in-built 10 Megabyte hard disk, the Intel 8087 co-processor, memory expansion and local area networking facilities. Whatever you need in a personal computer, PANTEK CAF-PC-16 should be your choice.

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*MS-DOS is a registered trademark of Microsoft Corp.
*IBM is a registered trademark of International Business Machines Corp.
*INTEL is a registered trademark of Intel Inc.

## Abacus International

SOFTWARE manufacturer Abacus International is doing a great deal of specialist design work for companies in the United States while, at the same time, attempting to boost sales of its products in that country.

Abacus claims its Business Basic, which is combined with an operating system, has been well received. About 300 verbal orders for the package have been taken, mainly from large companies wanting it for in-house use. Abacus says similar interest has been expressed in its accounting packages.

Abacus produces 25 software packages covering accounting, public accounting and medical-dental applications. It also produces about a half-dozen specialised packages.

The company says that, although it is trading profitably, experiencing no cash flow problems and expanding at a "controlled rate" it finds it a little difficult to compete with the industry giants. A development project based on the Intel 80186 is running slowly because Abacus has only been able to buy six of the chips. "We will continue development and manufacture until it is no longer feasible," the company said.

**Abacus International Pty Ltd,** 512 Bridge Rd, Richmond, Vic 3121. Tel: (03) 429 5844.

## AED Computers

ELECTRONIC instruments maker Acoustic Electronic Devices took the standard entry into microcomputer manufacturing with the assembly of S-100 and other bus boards. Its software innovation of Multiple Program Selection (MPS) has been a significant factor in AED's growth.

It recently established separate electronics manufacturing, research and development facilities at Merrylands, as well as sales outlets at Parramatta, Melbourne and Canberra.

The advanced architecture of the Supercomputer II includes a dual processor card and provision to run other S-100 processor cards in available bus slots.

AED's own IEEE696 standard S-100 motherboard provides 16 data and 24 address lines, and is used by some other Australian S-100 bus-based manufacturers.

The latest AED product is a dual 80286 plus Z80H card, running at 6MHz, which will eventually run Xenix-286.

Compared with typical personal computers, AED's business oriented range includes relatively high disk configurations and is well up market from ordinary personals. To fill a possible price gap below its range of offerings, AED continues to produce the economical Pulsaed based on Pulsar Electronic's Little Big Board.

Early this year, after losing money on a large export contract, AED was forced to seek equity participation. This has been used to expand research and development at the new Prospect factory.

This year's turnover is running at least double of last year's, and with several large contracts gained recently, as well as an expanded dealer base, AED has a bright future.

**AED Computer Pty Ltd,** 130 Military Road, Guildford, NSW 2161. Tel: (02) 681 4966.

## Applied Technology

APPLIED Technology's Microbee range remains the flagship of the Australian computer manufacturing industry, as the only local to win individual ranking on market share for a major market segment.

It is now legend that Microbee's success owes more than a little to the company's luck holding more often than any reasonable person could ever expect. That success has been a case of: see a niche, jump in, fight for a while, open another niche and jump again. Applied Technology has been prepared to do things its own way, keeping in close touch with what the rest of the world was doing, but in the end backing its own judgment.

There are more than 30 Microbee users groups around the country; there is a school of thought that strong user groups may imply some shortfall in supplier support. In the case of Microbee, the support that is missing is not so much from the manufacturer as from the third-party suppliers who, despite their enthusiasm and prolific offerings, do not offer the same depth as the top few third-party suppliers for major international products.

There has been some criticism of the Microbee, and particularly its suitability for use in schools. But, in general, computer buyers have voted with their cheque books, and discerning observers have recognised that any Australian product is going to undergo a lot more rigorous local scrutiny during its development than could ever be applied to an imported competitor.

While promised networking capabilities took a long time getting up to spec, at least they proceeded while others offered nothing similar, and now the repackaged Bee with an integral 3½in floppy drive for less than $1000 sets a standard against which others can be measured.

**Applied Technology,** 1 Pattison Ave, Waitara, NSW 2077. Tel: (02) 487 2711.

## ASP Microcomputers

ASP designs and manufactures microprocessor-based peripherals and also imports a single-board computer from the US. Although the company has designed its own micro, it doesn't plan to market the system.

One of its main products is a Z80-based bar code system which also has a built-in day and date clock. As with many of its products, ASP's bar code reader was created in response to a customer's suggestion. While talking to the customer, the company realised there was also an application for writing bar codes, a feature which is included in the machine. Users can produce their own bar codes with a dot-matrix printer interfaced to one of the bar code system's serial or parallel ports.

The single-board computer the company imports can be assembled by the company into a customised computer system with up to 64K-bytes of RAM and 1.6M-bytes of disk space.

ASP Microcomputers has been in business for seven years and has been designing and manufacturing for three to four years. It is trading profitably, has no cash flow problems and intends to stay out of "difficult markets such as microcomputer manufacture".

The company believes there's no future in designing micros because it may involve spending 12 months developing a product with an indefinite market. ASP says it "would like to stay small, become more efficient, and sub-contract assembly work." Nonetheless, it would also like to get into "larger markets."

**ASP Microcomputers,** 30 Cummins Gr, Malvern, Vic. Tel: (03) 500 0628.

## Ausdata

AUSDATA has built on the solid foundations of several strong product lines to broaden its range into new vertical markets. Behind the new lines, the original Ausdata 100 data-entry system and the Portabil system for retail delivery vans continue to sell strongly, aiding the company's rapid growth. Ausdata has even opened a Californian office to market the Portabil system in the US. Central to Ausdata's latest product offerings is a range of electronic point-of-sale equipment, including a top-of-the-line model which combines the function of a cash register with that of a general-purpose CP/M office computer.

Ausdata's point-of-sale equipment was acclaimed as the clear leader at a national retailing systems exhibition and conference in Melbourne last month. These products closely fit the company's philosophy of developing vertical market hardware capable of general-purpose computing.

Ausdata believes that philosophy enables it to isolate products which provide better solutions than general-purpose computers. It is developing quite a few more products including one which is almost ready for release.

**Ausdata Pty Ltd,** Unit 1, 175 Gibbes St, Chatswood, NSW 2067. Tel: (02) 406 5755.

## Carrot Computers

AS AN example of a vertically integrated computer company, it would be hard to better the efforts of Carrot Computer, which designs and builds its own hardware, adds application software and sells a full turnkey system to many clients. Carrot was established more than four years ago to engineer a reliable development system on to which it subsequently built a range of applications software.

As well as designing and building its own boards, the company has generally taken the Motorola route in choosing processor chips. It even uses a Motorola-specified bus to support its hardware. With the hardware and applications software together, Carrot has taken Unix as the operating system to tie it all together.

The company targets the general business market and has also made some sales to government. It considers it has plenty of room to move in the market because there are not many true multi-user system suppliers which could compete. Carrot architecture uses intelligent input-output to share one processor between five users, with multiple processors on the bus allowing a theoretical configuration of up to 100 users.

The company's seriousness about the multi-user market is underlined by disk capacities starting at 20M-bytes and its commitment to going to full 32-bit configurations as soon as the 68020 processor is shipped in volume. A relatively laid-back company which could be equally at home in Silicon Valley or Frenchs Forest, Carrot considers itself small but growing and servicing an Australia-wide clientele through key interstate offices. Its continuing product development is concentrating on product enhancements.

**Carrot Computers,** 13 Rodborough Rd, Frenchs Forest, NSW 2086. Tel: (02) 451 2244.

## Comprocessing

COMPROCESSING has been manufacturing for about 3½ years, and the company was just about to expand into new premises in Melbourne at time of writing.

A limited company for five years, Comprocessing offers systems for financial, legal, and point-of-sale applications. Its systems are multiuser, multiprocessor and designed around the Z80A 8-bit processor.

But Comprocessing does not sell "computers in boxes". Nor does the company advertise, preferring to operate on a word-of-mouth basis. To date, Comprocessing has 75 sites up and running.

Configurations of Comprocessing's machines include: two terminals, two printers (high-speed dot-matrix), and 192K-bytes of RAM; four terminals, four printers, and 320K-bytes of RAM; and two terminals with five local and five remote cash registers, three processors, and 192K-bytes of RAM. All systems are supplied with 40M-bytes of hard-disk storage.

All software supplied with Comprocessing's machines is written in-house, with the exception of the word processing package which is a modified version of Spellbinder. The company has also written its own CP/M-compatible operating system called MDOS.

Comprocessing employs eight people and has two offices, one in Sale, and the other in Morwell, both in Victoria. A new system offering much the same features and power, but less expensively, and in different packaging, will be released soon.

**Comprocessing Computer Systems,** Cnr Cunninghame and Desailly Sts, Sale, Vic 3850. Tel: (051) 44 3399.

## CMAD

COMPUTER Manufacturing and Design claims to have been the "pioneer" of computer manufacturing in Australia, but it has had problems recently. The company was in receivership at time of writing because of problems with capital funding.

The company embarked upon expanding its hardware and marketing areas early last year, and sought funding to allow it to do so. In June last year, an agreement was reached with an unnamed partner who was to inject funds for expansion.

But the agreement fell through because of economic reasons and Computer Manufacturing had to look elsewhere for funds. Meanwhile, the company was getting low on working capital.

The company found another willing partner in Malaysia, but political problems prevented the scheme from getting off the ground. Computer Manufacturing then ran out of funds and asked the Victorian Economic Development Commission to appoint a receiver manager.

The company has since secured the necessary funds, and receivership is expected to be lifted soon. The company says most of the legalities of lifting receivership have been finalised.

Negotiations are underway to export a large network of computers to Asia. Marketing will be extended to Asia and the US. New models in the CM2 range (announced late last year) were expected to be made this month, and the existing CM2 machines have been selling well.

Computer Manufacturing and Design has been in business for about 15 years and is returning to the Australian market in a big way.

**Computer Manufacturing and Design,** 369 Royal Pde, Parkville, Vic 3052. Tel: (03) 348 1277.

## Datamax

LIKE many other Australian manufacturers, Datamax has moved from conventional microcomputers to more powerful products with a strong multi-user bias. It has continued to sell its well packaged CP/M machines to established markets in China, Hong Kong and through OEMs in Australia, but sees client demand rapidly becoming more sophisticated.

Having considered building an IBM PC compatible, Datamax chose instead to develop an 80186-based system capable of networking 16 users.

The Datamax 186 launched last month at a South-East Asian computer exhibition in Hong Kong offers hard disk from 10 to more than 100M-bytes and a choice of third-party peripherals.

**Datamax Pty Ltd,** 34-40 Central Ave, Manly, NSW 2095. Tel: (02) 977 6522.

## Dedicated Micro Systems

DEDICATED Micro Systems is essentially a two-man company, and all work outside initial hardware and software development is contracted out, including assembly

A multi-user, multi-tasking system running TurboDOS, was being developed at the time of writing. The company may move into the 68000, Unix-based area next year.

Research and development absorbs 25 to 35 per cent of turnover, but the company prefers to concentrate on existing technology.

The company is trading profitably, experiencing no cash flow problems, and turnover for the last financial year was $600,000.

**Dedicated Micro Systems,** 173 Canterbury Rd, Canterbury, Vic 3126. Tel: (03) 836 8644.

# HI~TECH C

## An Australian developed C Compiler that runs rings around the opposition.

**Features:**

• Compiles Full V7 C — including enums and structure operations • 50%—100% faster code than any competing Compiler • Complete I/O library • Source for libraries included — no royalties • Easy to use — one command compiles, assembles and links • Powerful debugging tool included • Command line I/O redirection • FAST floating point • Locally developed and supported • Supports ROM-based software • Includes MACRO assembler, linker and librarian.

This is a solid production-quality compiler now being used by government departments, major Australian companies and many small companies and individuals. It is available for the Z80 and 8086/8088 processors, running under CP/M-80, CP/M-86 and MS-DOS (or PC-DOS). Whether you are a commercial software developer or a hobbyist wanting to learn the most popular small-system language today, HI-TECH C can provide the answer to your needs.

**Benchmark:**
Program: Primes (Eratosthene's sieve)

| Compiler | Execution Time | Compilation Time | Program Size |
|---|---|---|---|
| HI-TECH C | 40 | 100 | 4153 |
| Whitesmiths | 60 | 420 | 15745 |
| C/80 | 63 | 140 | 3584 |
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# Now, a multi-user system that lets you add users without losing performance.

The Pulsar System 7000 is a Multi-User Z80A-based system running at 4Mz. Each system may be expanded to 4 users, with each user having their own 64 or 128K of Ram and a unique Z80A at 4Mz.

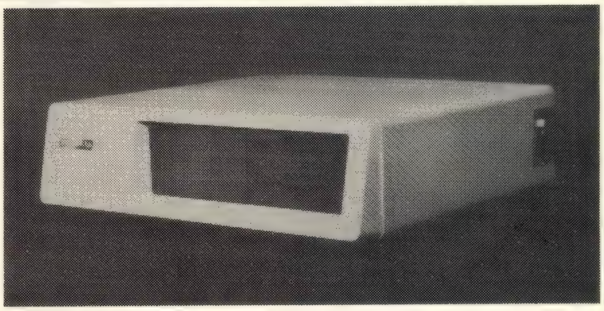
The system has hard disk capability to 100Mb with floppy disk back up of 1.4Mb per floppy. Also available 5Mb removable hard disk.

Each system has a minimum of two bidirectional RS232C printer ports (expansion to 8 ports is available).

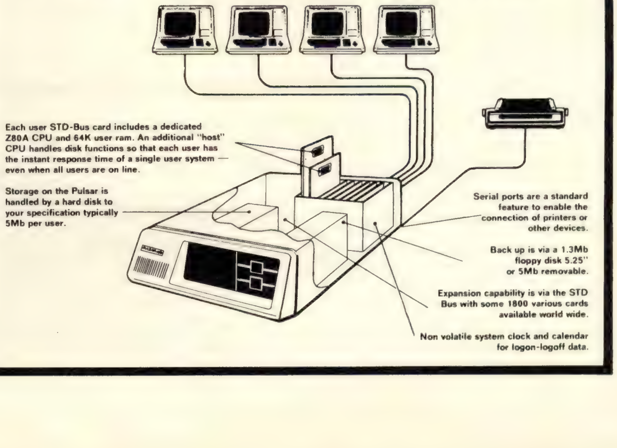
System 7000 uses the industrial standard STD Bus concept allowing the use of various cards including colour graphics.

The system 7000 has been designed by Pulsar Electronics in Australia to meet Australian conditions.

The operating system is TurboDOS 1.4 which supports both CP/M and MS-DOS.



**PULSAR 7000 Multi-User Computer System**


Each user STD-Bus card includes a dedicated Z80A CPU and 64K user ram. An additional "host" CPU handles disk functions so that each user has the instant response time of a single user system — even when all users are on line.
Storage on the Pulsar is handled by a hard disk to your specification typically 5Mb per user.
Serial ports are a standard feature to enable the connection of printers or other devices.
Back up is via a 1.3Mb floppy disk 5.25" or 5Mb removable.
Expansion capability is via the STD Bus with some 1800 various cards available world wide.
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## Dewhirst Corporation

SEVERAL Dewhirst DBM machines, which are heavily geared towards database applications, have been installed in Australia and the product has gained acceptance in the domestic market. Although the company has maintained a relatively low profile lately, it has been in business for four years, and claims to be able to offer a multi-user system with a variety of options and processing power complete with software at a competitive cost structure.

The DBM machine can be configured to provide any of the 12 to 14 users with 8-bit processing power complemented by the standard 64K-bytes of RAM, or a full 16-bits with up to 1M-byte of memory. Plans to implement 32-bit capabilities are being discussed.

The company plans to introduce new products shortly including a 32-bit board for the multiprocessor DBM, and a CPU card which support any one of six processors including: 8086; 80186; Z8000; and the Z80000. A project costings software package developed by Dewhirst may soon be exported to Malaysia where extensive construction work is occurring.

Dewhirst is trading profitably, although it is experiencing cash flow problems. The company is optimistic about its future and is prepared to export systems once the domestic market has been tamed.

**The Dewhirst Corp Pty Ltd,** 428 St Kilda Rd, Melbourne 3004. Tel: (03) 267 5877.

## Digital Electronics

PAUL Edwards splits his time between Digital Electronics and his duties as president of the Australian Computer Equipment Manufacturers Association (ACEMA).

Digital ELectronics believes in the potential of Australian companies to gain a significant share of the lucrative small to medium multi-user market and is doing everything it can to become the local leading light in that area.

It is already one of the top ranked local suppliers, with orders peaking at $1.2 million last month and a strong advertising campaign for its new range in the computer press.

Digital Electronics was long seen as following the same path as Webster, due to their common background in selling Digital Equipment Corp PDP-11 processor based equipment, largely through OEMs who tackled their own vertical markets.

Recently its product lines have diverged, with Digital Electronics expanding beyond the DEC range of processors to encompass Motorola 68000 series processors and soon the NatSemi 32032, under a design policy of horizontal architecture which enables each processor to operate in the same environment.

Published benchmarks have done a lot to boost the ratings of its 68000 machines which have consistently come in at or near the top of rankings of large numbers of competitive machines under the Unix operating system.

It will remain predominantly a hardware company, selling through its offices in Sydney, Melbourne, Canberra, California and soon Perth.

**Digital Electronics,** 31 Bridge St, Pymble. NSW 2073. Tel: (02) 449 0290.

## ERACOM

ERACOM'S ability to attract more notice than most Australian computer manufacturers is due more to the sound philosophical premises on which its activities are based than on any recent product initiatives.

The company has recognised that its competitive advantage lies squarely in the area of data security and encryption. It is content to cooperate with other local manufacturers on general-purpose hardware rather than trying to compete.

As a classic example of the latter, the third series of its 16-bit ERA-80 computer is, in fact, a badge engineered Labtam 3006.

Eracom's one new offering in the past year is its backend Electronic Security Module (ERA-ESM) which attaches to a mainframe's input-output channel where it provides data encoding services which can't be accessed by systems programmers.

Progress is not yet as hectic in the field of data security as it is in general-purpose computer hardware. The ERA-60 remains the only secure CP/M-MP/M system on the market. Eracom also continues to do good business with its 2007 programmable encryptor and the 3007 multi-channel version of that unit which sits on a serial communications line.

Among the prestigious achievements of Eracom's security products are several involvements with IBM — as a joint tenderer for the Queensland Police Department and supplying equipment for IBM's internal use. Although Eracom is the token Australian on the Federal government's notorious period panel contract, it still pushes a militant, pro-Australian line based on stronger credentials than many companies.

**Eracom Pty Ltd,** 6/26 Greg Chappell Dr, Burleigh Gardens Industrial Estate, Burleigh Heads, Qld 4220. Tel: (075) 56 0911.

## General Electric Developments

ANALOGUE systems expert Rick Walters set up General Electronic Developments (GED) to manufacture specialised systems for hospitals and government departments. It gained an important break when EMI dropped out of that field and licensed its business to GED. By redesigning and adding to that range, GED has built up a comprehensive range of analogue systems.

The company moved into digital systems with the recruitment of David Hatch from AWA to design a high speed data terminal. GED also released a single board CP/M system in the same year, one of the first to reach the market.

Walters says the company's growth has been slower than some others in the industry because, as an analogue engineer, new digital concepts had to be justified to him at a more detailed level than if he was fully conversant with digital terminology. His background also enabled him to look objectively at market needs, and has prompted GED's move into networking.

Walters' view of the need for economical networking led to the development of a Z80 based 64K-byte RAM desktop computer, which can be linked to form a Centinet network.

An identical system is provided for both workstations and the central data management computer, except that the workstations have one optional 8in floppy drive while the central system has two drives out of the eight which can be linked to any unit's floppy controller.

While the network system is selling in small quantities, GED is maintaining growth by doing things outside of computers, which accounts for around half of its business.

**General Electric Developments (Sales) Pty Ltd,** 396 Victoria Road, Gladesville, NSW 2111. Tel: (02) 816 2111.

## Hartley Computer Aust.

AFTER one experience of seeing itself almost sink on the adventure of manufacturing computers in Australia, Hartley Computer is again using that springboard to build up an ambitious manufacturing program.

While earlier members of the 3900 series rested on the concept of replacing other vendors' machines for running Hartley's accounting systems, the recently released high-performance 3923 is designed as a complete, general-purpose system which will be sold to government and through original equipment manufacturers. It will not use the 3923 as an excuse to try breaking into other vertical markets with specialised software. The 3923 combines multiple 80186 and 80286 processors to offer MS-DOS, Unix System V and Hartley's own proprietary operating system.

Hartley is moving into general-purpose hardware in an attempt to boost manufacturing volume enough to use increased automation. For that reason, Hartley Computers is also interested in taking on contract manufacturing for other companies.

Hartley Computer's accounting market continues to provide the company's bread and butter and keeps the earlier 3900 series models thriving. But continued improvement in the price-performance ratio of high-end machines will lead to some rationalisation within the range.

Hartley Computer's new ambitious manufacturing program has the further advantage of the company's new-found status as virtually the Australian flagship of the New Zealand-financed Paxus group's expanding activities in the computer industry.

**David Hartley Computer Australia,** 80 Jephson St, Toowong, Qld 4066. Tel: (07) 377 0509.

## JED Systems

JED Systems has been in business for six years, manufacturing from the outset. Although the company's main market is industrial, it can configure a complete microcomputer system.

JED produces a wide range of boards and cards, including a complete microprocessor system on a single STD bus card, graphics cards (soon) and memory cards. The single-board computer is a relatively new concept on STD bus cards, JED says. STD bus systems are usually built around a number of cards.

The card has a surprising number of features including an NEC 800 CMOS processor emulating a Z80 at 4MHz on-board Tiny Basic and operating system, up to 16K-bytes of RAM and 32K-bytes of PROM, a real-time clock with extensive alarm facilities, and an EPROM.

JED has also packed printer driver routines, an RS232 port and two 16-bit counter/timers on to the board . . . Not bad when you consider the board measures only about 16cm by 11cm. All RAM can be non-volatile, and electronic disk is also available.

The CSIRO, industrial customers and the academic world constitute JED's market. The company has also exported to New Zealand, Saudi Arabia and Canada.

Turnover last year was about $250,000 and the company is trading profitably without cash flow problems. Almost 20 per cent of turnover is spent on research and development and the managing director, Ed Scholl, spends about 80 per cent of his time in R and D.

JED's boards are assembled by full-time staff working from their homes. JED's head office is Scholl's house . . . It may be no coincidence that Mrs Scholl runs the business side of this financially tidy company.

**JED Systems,** 28 Anderson St, Boronia, Vic 3155. Tel: (03) 762 3588.

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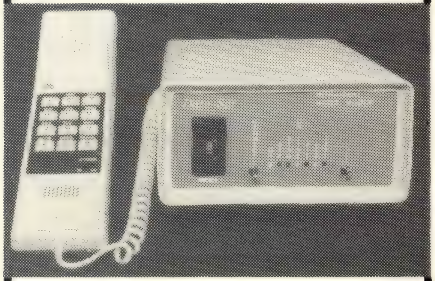

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## J.T. Microcomputers

DESPITE the conventional wisdom that 8-bit is dead, at least one Australian computer manufacturer sees a lot of life remaining thanks to the TurboDOS operating system providing a virtually degradation-free multi-user environment at an affordable price.

To make the dollar stretch even further, JT Microcomputer has developed its own dual Z80H slave board with 256K-bytes RAM per user and four input-output ports per board, thus doubling the number of slave users on the one system.

A small company which wants to stay that way, JT was formed in the early days of microcomputing especially to get into that field and now relies on word-of-mouth recommendation for sales.

As well as selling its multi-user Dolphin as a general-purpose machine and into some vertical markets, it markets its S-100 boards direct and offers related instrumentation work.

**JT Microcomputers,** 109 Kooringal Ave, Thornleigh, NSW 2074. Tel: (02) 848 0452.

## Labtam International

LABTAM'S growth in the past year appears to have been almost meteoric, with staff numbers doubling, and two new buildings being erected to provide the company with about 1000 square metres of extra space.

The Labtam system has evolved into a far more powerful machine than its original design, and the company is competing directly with DEC's VAX series of machines. Labtam claims that its single-board computer using the National Semiconductor 32032 32-bit processor (internally and externally) which runs Unix is more powerful than a VAX 750 system.

The company which is building 60 computers a month is also importing 1M-byte RAM cards which use 256K-byte chips and has its own networking software up and running. Perhaps an element of Labtam's success is that 35 per cent of the company is owned by Pratt Financial Services which obtained a MIC license and paid a "substantial amount" for its part of the company.

The sell-off was beneficial for Labtam, stabilising cash-flow in particular.

**Labtam International Pty Ltd,** 43 Malcolm Rd, Braeside, Vic 3195. Tel: (03) 587 1444.

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## Macpro Computers

MACPRO Computers, founded in January last year, specialises as an Australian microcomputer OEM house. The company supplies Australian dealers with hardware based on the Z80 MPU and running CP/M 2.2, or the multiprocessing TurboDOS operating systems.

Macpro says it recently moved into larger premises in Clayton, Victoria, to cope with increased production demands. The company offers a range of services to dealers including customised hardware and software development, installation of systems and after-sales technical support and maintenance contracts.

Macpro is developing a range of 16-bit multiprocessing and multiuser TurboDOS-based systems. Networking for up to 256 terminals in clusters of 16 will be a feature of the new systems. The range will also be compatible with PC-DOS, the company says. Up to 1000M-bytes of Winchester hard disk, removable hard disk, and tape drives will provide storage. But Macpro says it will still support the 8-bit range.

**Macpro Computers,** 2/3 Forest Drive, Clayton, Vic. Tel: (03) 544 3200.

## MF Computers

THE continued prosperity of MF Computers, which grew out of the Mr Floppy disk drive maintenance service, represents a typical example of a company sliding rather than crashing out of computer manufacturing in Australia.

MF Computers expects to build the MF2000 system for another year, but has moved on to greener pastures, such as interface boards for incorporating hard disk drives with Sanyo MBC-550/555.

At $4000, including tax, for a 256K-byte Sanyo with 10M-byte hard disk and $1750 for a 10M-byte IBM PC upgrade including power supply and fan, MF Computers has found a useful niche from which to support ongoing research and development.

**MF Computers Pty Ltd,** 9 Ada Ave, Brookvale, NSW 2100. Telephone: (02) 939 1800.

## MICA Associates

EQUITY participation by the Australian Industries Development Corporation has helped Mica's growth over the past year to a $3 million annual turnover and more than 40 staff, taking the company towards its goal of becoming the major Australian maker of computer workstations and cluster systems.

Its products have evolved from IBM and Honeywell-compatible terminals to those able to run the CP/M-86, Concurrent CP/M-86 and MS-DOS operating systems.

Considerable interest has been generated by Mica's latest development, its Micalink local area network and cluster controller, which reportedly connects up to 32 workstations running Concurrent CP/M-86 with DR-Net extensions.

**Mica Associates Pty Ltd,** Cnr Gladstone and Townsville Sts, Fyshwick, ACT 2609.

## Ortex Australia

IF LAST year's Australian Micro Computerworld supplement on Australian manufacturers was viewed as a talent quest, there is no doubt the real winner was the then tiny Canberra company Ortex, a designer-driven company running hard at the leading edge. Ortex received some modest and well deserved recognition at the right time, and demand for its products took off like a rocket.

For a while, demand was more than the company could cope with. It was forced to rely, more quickly than it might have hoped, on its Net 186 product, pushing back its advanced 80286-based offering while things settled down.

It has delivered 60 Net 186s and is looking at demand for 1000 units in the next year. Orders will be taken through a national distribution network with 65 sales personnel. Sales will come through those distributors as well as through original equipment manufacturers.

Much of Ortex's work is with operating systems, including the purchase of Unix source licence for porting to Net 186. It believes MS-DOS is worth 100 machine sales and is installing it under Concurrent CP/M-86 and Unix, a similar path to that planned for its highly successful records management system, originally developed under MP/M-86.

The company's original computer-aided circuit design system is being extended from multiwire to multilayer printed circuit boards and is still in heavy use despite the stabilisation of the product line. Before finalising its advanced multiple 80286 processor system, incorporating Unix availability, 256K-byte memory sub-assemblies and original programmable logic arrays, Ortex expects to see shakeout in the multi-user market.

**Ortex Australia Pty Ltd,** Unit 3/1 Pirie St, Fyshwick, ACT 2609. Telephone: (062) 80 5283.

## Paris Radio Electronics

PARIS Radio may have the distinction of being the biggest fish in the smallest puddle of the Australian computer manufacturing industry . . . It is unquestioned leader in Motorola 6809 processor-based systems with its Sphere range.

There was a short period in the history of microcomputing in which the 6809 was widely viewed as the processor of the future, but it was quickly swamped by the popularisation of true 16-bit processors. The Sphere range offers choices of 1 or 2 MHz processors, up to 1M-byte of main memory, any combination of 5¼in or 8in floppy and hard disks, single or multi-user configurations, and the Flex and OS-9 operating systems. Paris Radio has been building the computers for four years, selling to business users and hobbyists.

But building its own boards and selling its computers throughout Australia, New Zealand and the US are only parts of this small company's growing activities. It has developed a large amount of software for 6809-based systems, including a bulletin board it runs for 6809 enthusiasts. The bulletin board software is also exported.

**Paris Radio,** 161 Bunnerong Rd, Kingsford, NSW. Tel: (02) 344 9111.

## Pennywise Peripherals

PENNYWISE was formed in 1977 by a one-time senior lecturer at Monash University in computer science, Dr David Boulton. The company was established to manufacture and market a digital cassette system for use with microcomputer systems but has since diversified to also design and manufacture microcomputer systems.

The company says it has an "excellent" credit rating and is almost entirely funded by its own earnings. Small research and development grants have been obtained.

The market at which Pennywise machines are aimed is mainly industry and education. The company, which has been a contracted supplier to Telecom Australia for five years, has sold about 35 systems to Telecom this year. Other customers include the CSIRO, the RAAF, Victoria's State Electricity Commission, Queensland's Electricity Generating Board and Institute of Technology, a number of Melbourne's TAFE colleges, and several hospitals. Systems have also been exported to New Zealand and Hong Kong.

Pennywise offers single or multiuser systems with floppy or hard-disk storage systems. Single-user systems run under the FLEX9 disk operating system, and have three circuit boards housing the CPU, memory and disk controller. They can drive one or more floppy disks or a hard disk. The multi-user system has up to 448K-bytes of RAM, up 70M-bytes of hard disk, and the operating system is Uni-FLEX, claimed to be a variant of Unix.

Pennywise also distributes Motorola's microcomputers and related products, and Miniscribe hard-disk drives.

**Pennywise Peripherals,** 96 Camberwell Rd, Hawthorn East, Vic 3124. Tel: (03) 82 2389.

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Supports the 8087 floating-point maths chip.

**Panel** .................. $380
A powerful and flexible tool for designing and editing data-entry screen. It generates program code for each screen, including input editing, and a terminal selection program.

**Halo** .................. $200
IBM PC Color Graphics routines: a complate library of graphics primitives for Lattice C.

**PMate** .................. $270
PMate is the Rolls Royce of programer's editors. It is perfect for writing, editing, & documenting your C programs.

*Note: Halo, PLink, Float-87, Panel and PMate are available for MSBasic, MS FORTRAN, COBOL-86, and PL/I-86 as well as Lattice C.*

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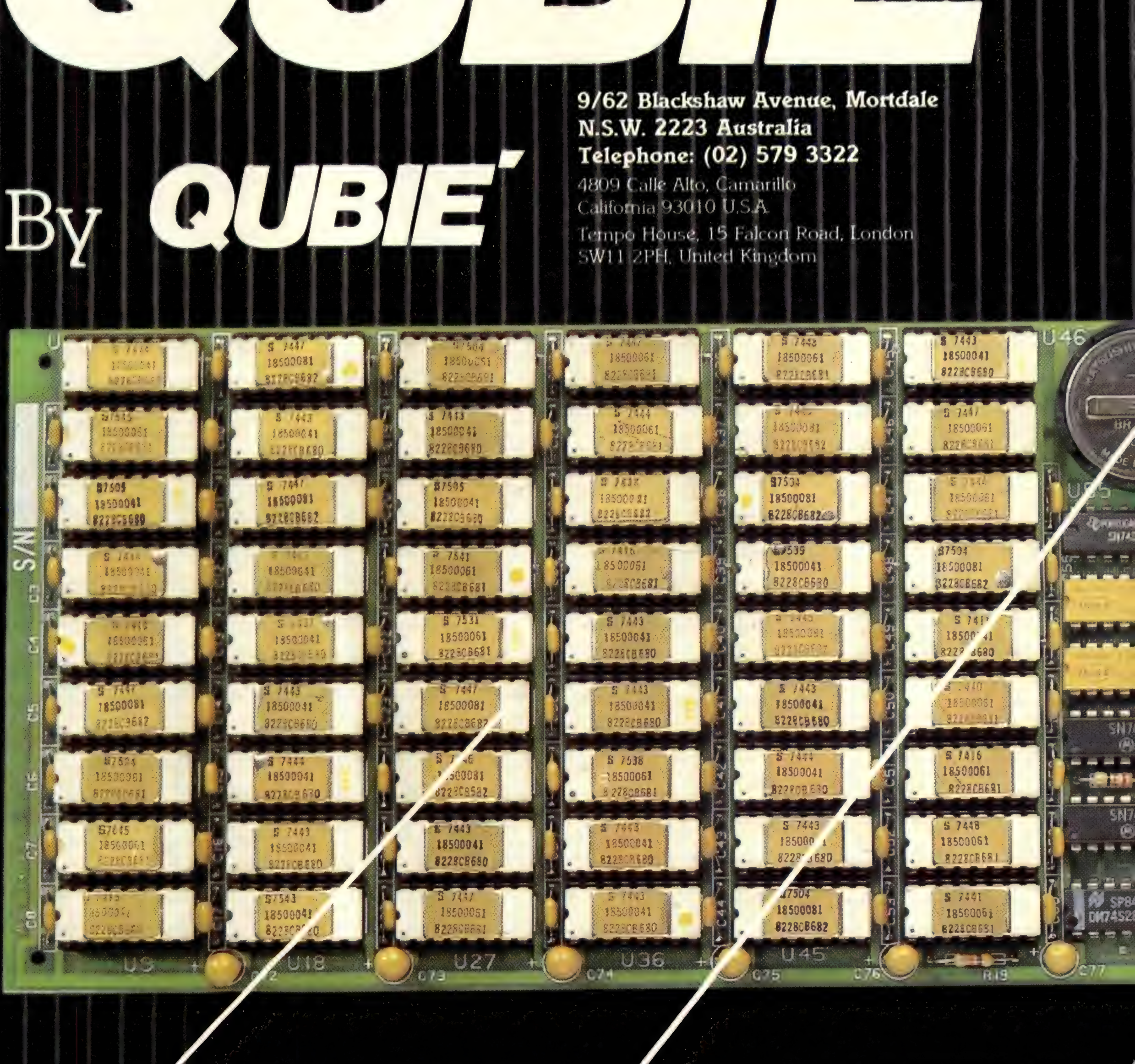

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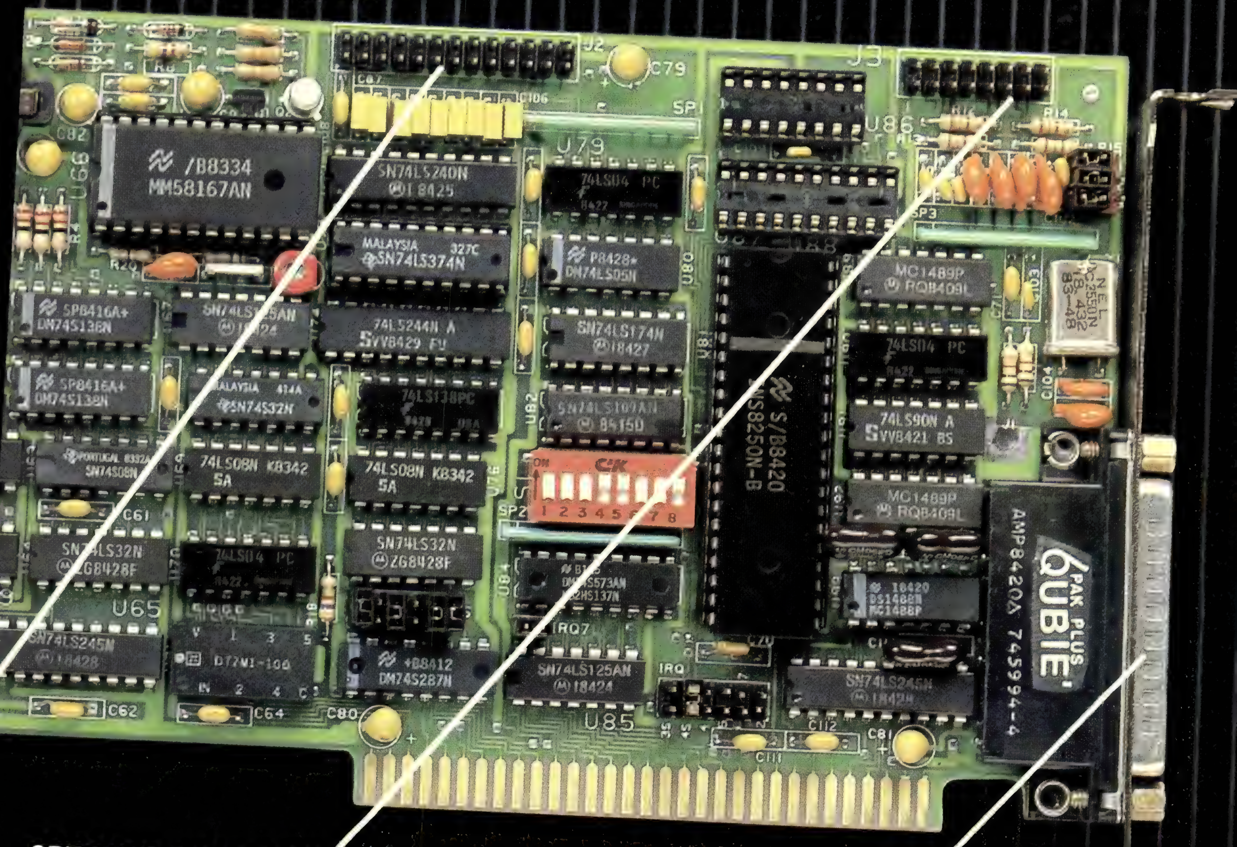

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## Pericomp Computer

WITH modest success as a hardware manufacturer, particularly in its native Queensland, Pericomp is preparing for the day when its business must continue to operate without that manufacturing side, which it expects to be eventually supplanted by local assembly of imported technology. Despite such long-term considerations, the company has gone through a cost reduction exercise on its inexpensive multi-user Pied Piper range to enable it to further drop prices while maintaining profits.

Its other areas of business are moving more up-market into combined hardware and software for the hotel and retail vertical markets, plus distribution of high performance peripherals and sub-assemblies.

Pericomp's doubts about the future of straight manufacturing are based on some bitter experiences with its dealer base, which it sees as hell bent on self-destruction — a training ground for bad debtors who go to the wall as soon as they get a hiccup.

**Pericomp Computer,** 189 Kent St, Sydney 2000. Tel: (02) 27 5953.

## Portable Computer Co.

THE Portable Computer Co, which began manufacturing last year, runs against many general trends dominating Australian computer manufacturing. But in only 12 months, it has more success than most.

Apart from Applied Technology, The Portable Computer Co is the only Australian company trying to stay mainly in the personal computer business. Others with long-term strategies are rapidly moving to the more open multi-user or specialised systems markets.

The Portable Computer Co's lead product, Porta Pak, is a superbly engineered, high-performance alternative to long-standing market segment leader Kaypro. The main things both have in common are the Z80 processor, CP/M operating system and conventional portability with the keyboard clipped over the screen. The Porta Pak offers high-resolution graphics, much lighter, more compact construction, which performance components and a novel choice of cabinet and screen colors.

The Portable Computer Co scored useful publicity through being the first company to receive investment funds through the Management Investment Companies (MIC) scheme. It was one of the few at exactly the right stage of development to fit MIC licencee guidelines. That investment appears to be working well, although weekly meetings with the investor have been the limit of its requirement to inject management into the company. The modest capital injection of $350,000 has been sufficient to get the Portable Computer Co trading profitably.

The Portable Computer Co's slightly larger, high-powered PPC-8 with its internal S100 bus has been pushed into the background by the PortaPak.

**The Portable Computer Co,** 80 Beauchamp Rd, Matraville, NSW 2036. Tel: (02) 661 4877.

## Precision Microsystems

PRECISION Micro is trading profitably, although it is experiencing some cash flow problems the company attributes to the Australian public not buying Australian products, among other things.

But the company is still very much in the running, and systems offered include a multi-user system capable of handling 255 users. Precision Micro's offerings extend to a 16-bit 80186-based system, and, depending on its success, and that of the company generally, an 80286 system may be developed next year.

Although the company has not experienced much difficulty in obtaining quantities of 80186 chips (the source remains unidentified), it is expecting problems in securing supplies of the newer chip. Research and development investments run to about 7-8 per cent of turnover, and future developments include more office automation software, the 80286 project and a variety of peripherals.

**Precision Micro Systems,** 3A/18 Milford St, East Victorian Park, WA 6101. Tel: (09) 362 4885.

## Progeni

PROGENI Systems, a New Zealand micro manufacturer, was recently incorporated in Victoria, because of "dramatic growth" and "rapid acceptance" of its products in the marketplace. Progeni's software has been used by the Australian Army to train recruits, and since the Poly system was popular in education, the company has developed a new software package which creates a "complete software environment that allows trainers to design, prepare, deliver, and manage training material without writing a single line of code."

Progeni's Poly microcomputer is a 6809-based system with 64K-bytes of RAM and 20K-bytes of ROM. A 14in color screen, a user port, a network interface, an optional RS232 port, an optional 64K-byte RAM disk, a keyboard with cursor control and a numeric pad are included or can be included as part of the terminal.

Progeni has an 8in floppy disk drive unit which can be configured to handle up to 32 users, 56K-bytes of RAM, 600K-bytes of storage space, and an RS232 port for connection to a printer, modem or other computer systems.

The other disk drive (Proteus) system has two 5¼in drives that offer all the features of the larger disk, and also has 6809 and Z80 processors built in. It switches from one processor to another automatically, depending on whether 6809-based or CP/M-based software is running.

**Progeni Systems,** 68 Burwood Highway, Burwood, Vic 3125. Tel: (03) 288 7366.

## Pulsar Electonics

PULSAR Electronics is another success story, with turnover of almost $5 million, an increase of about 300 per cent, according to managing director Phil Delacretaz.

The company is a preferred supplier to the Victorian government, which uses Pulsar machines for administration applications and as part of the year-11 and year-12 school curriculum. Its main product is a range of 8-bit machines that run TurboDOS and can handle up to eight users.

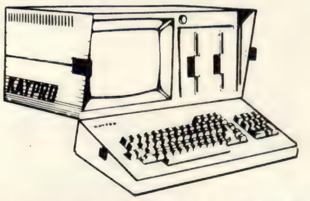
Pulsar says about 4000 of its single-board Little Big Board computers have been sold and are used in applications ranging from a controller for a radar dish to a slave in a commercial system. The board is also part of the company's own computers.

Since 1983, Pulsar has moved to larger premises and doubled production facilities. It employs 25 staff.

About 10 staff members are engaged in research and development which absorbs up to 40 per cent of turnover. Pulsar's 16-bit machine (which the company claims will have 60 times the networking performance and 128 times the disk throughput of previous machines) will have cost about $300,000 and 10,000 man hours to develop by the time it is released.

The export market is "reasonably stable" and is a source of "continuing business" for Pulsar. Products are shipped to the US, the UK, New Zealand, Taiwan and Japan. The company is trading profitably.

**Pulsar Electronics,** Catalina Drive, Tullamarine, Vic 3043. Telephone: (03) 330 2555.



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## QT Computer Systems

IN An era where mass produced personal computers reign supreme, it is refreshing to hear of one company which still adheres to a professional hobbyist philosophy.

QT Computer Systems is content not to become a "major" company, seeing instead space for co-operation between local manufacturers such as it has established with Melbourne company SME.

Its mainstream computer product is the Accelerated Business Computer, a relatively conventional S-100 bus TurboDOS operating system machine running it own dual processor Z80-8086 slaves, with the low-end option of a single processor system running CP/M or MP/M.

Beyond that and its range of S-100 components and future hard disk subsystems, it has one technically interesting product in the form of its CO-16 coprocessor piggyback board which plugs into the Z80 processor socket of many popular computers.

The CO-16 range provides an 8086, 68000 or 80186 in conjunction with the remounted Z80, MS-DOS, CP/M-86, CP/M-68K (and soon Unix) operating systems and 256 to 768K-bytes RAM which can serve as a RAM disk under CP/M.

**QT Computer,** 41 Sydney Street, Marrickville, NSW 2204. Tel: (02) 519 2680.

## SME Systems

SME Systems is still going strong, and has become better known through its recent campaign for the Knight 2000 8-bit personal computer. The company is trading profitably, but says it is experiencing cash flow problems mainly because of a large research and development budget.

SME has been in business about seven years. Turnover last year was more than $720,000, and the company says it's growing about 10 per cent a year.

SME produces a number of computers, including the MPU 700 and 200 multiprocessing systems, the Knight 2000, the Aries RAM-based CP/M system with electronic disk and a variety of S100-based products. Three of the 13 staff are involved in research and development, which absorbed $125,000 last year.

The main *markets for SME* have been the technical and commercial fields. But the company will move towards industrial applications, as competition has become too fierce.

SME will still sell and support its present lines, but the new direction will involve a change from S100-based systems to STD bus systems. The company has also bought the assets of RDM Computers (but none of the liabilities), and its Knight 2000 system is based on the Aussie Byte board which was RDM's main product.

**SME Systems,** 22 Queen St, Mitcham, Vic. Tel: (03) 874 3666.

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## Software Australia

SOFTWARE Australia came briefly to notice as one of the early Australian companies to produce a Motorola 68000-based machine. But that machine's dependence on the less-than-successful CP/M-68K operating system meant it was virtually still-born.

But Software Australia has persisted with other areas of its S100-based machine, for which it produces some boards locally, although generally to overseas designs. Its main offerings are small multi-user configurations based on a 10MHz 8086 processor running MP/M-86 or Concurrent CP/M-86, with a move planned to 6MHz 80286 as soon as shipments of these chips arrive.

Software Australia started building its own machine because of difficulties in fitting original software to others' hardware. There were also tax disincentives to reselling bundled software. The company now sells into vertical markets, such as nursing homes. It also sells some general-purpose machines. But the company's bread and butter income continues to be derived from importing disk drives and printers for sale to other manufacturers.

**Software Australia,** 2 Somerfield St, Mt Gravatt, Qld 4122. Telephone: (07) 348 4877.

## Synax Systems

ONE of the most popular areas for local companies to try manufacturing has been multiprocessor systems running under TurboDOS or similar proprietary operating systems, such computers being readily put together with standard buses and general purpose circuit boards.

It is hardly surprising that one of the few companies to come into local manufacturing, emphasising marketing, should choose that market segment as its entry point. Synax claims to be the first company to have 80186 processors working as both masters and slaves (user processors) under TurboDOS.

The company believes it has computing experience and business sense, without being an engineer; so it is content to put together its systems using JC Systems boards, which it distributes in Australia. Synax, which wants to maintain high performance, is still keeping prices well below those of other companies.

Synax is geared to establishing a relatively high-volume operation through dealers who add vertical market software for their own particular clients. The company is working on a tower cabinet to overcome crowding in its present conventional cabinet and wants to develop a database system which bridges the gap between the two main offerings under TurboDOS: the high powered MDBS III and the user-oriented dBase II.

**Synax Systems,** Cnr Pacific Hwy and Beaconsfield Pde, Lindfield, NSW 2070. Tel: (02) 467 1166.

## System One

A NUMBER of Australian hardware manufacturers sell on the strength of their own proprietary software, particularly accounting software, but none more so than System One. It has really stretched the power of a single Z80 processor to serve five concurrent users running its own applications packages, with the option of rebooting single user CP/M

System One's operating system arose mainly by accident, the pioneers of the company having started in the first days of home-built microprocessors, when memory was expensive.

When System One decided to build its own 64K-byte Z80 system it wa able to fit an 8K-byte master operating system and five 8K-byte user slots into the memory with plenty to spare. All applications are written in Z80 assembly language, broken into modules of less than 2K-bytes.

The path followed by System One closely parallels that of an earlier successful Data General Nova OEM, Teledata, which developed a similar memory-efficient, multi-user system.

The System One and Teledata stories are instructive of some interesting system design considerations which are usually overlooked in an era of throwing cheap hardware at design constraints. It is often forgotten that 16-bit minis such as Nova share the same design limitation as 8-bit micros — and address space limited to 64K-bytes.

System One is still producing the same system, but is selling to an expanding market and has moved to larger premises. Increased emphasis has been given to vertical market software, and the use of assembler has made System One's programs much more competitive.

**System One Pty Ltd,** 32 Wyndham St, Alexandria, 2015. Tel: (02) 690 1311.

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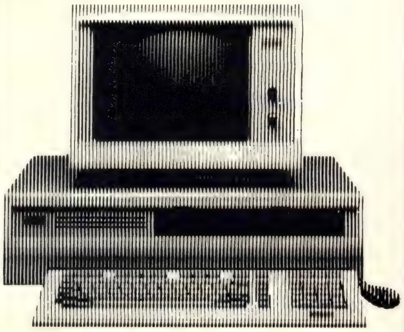

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## Time Office Computers

STILL the most prominent Australian business computer manufacturer, Time Office Computers is particularly grateful for the continued kindness of the Australian Taxation Office — not through any tax avoidance scheme but through its continued volume purchases.

For the past year, Time Office has been concentrated on doing original mechanical engineering work in the ergonomic area to satisfy union requirements which are starting to strongly influence major clients in government and big business.

Time Office has just released an ergonomic repackaging of existing hardware. The video screen is mounted on a track attached to the back of a desk, providing forward and backward movement, -7° to +30° tilt and ‡90° swivel with zero desk footprint.

Porsche's Austrian design studio did some design work although not enough to put a Porsche badge on it.

The ergonomic workstations will obviously be taken across to Time Office's XLAN 32-bit range, as well as to whatever products result from Time Office's recent rescue of the Dulmont Magnum. Although the Magnum has continued as a separate product within the company, it is seen as a means to serve demand for a 16-bit offering fitting between the present range and XLAN.

The revamped Magnum may well plug into Time Office's ergonomic workstation to serve as its 16-bit processor while retaining the capacity to be unplugged to take into the field or home.

Time Office's 18-month-old production facilities have enabled it to move from building each group of machines to order, with small quantities of options for individual clients, to substantial batch runs — with resulting economies of scale.

**Time Office Computers Pty Ltd,** 99 Mount St, Nth Sydney 2060. Tel: (02) 437 4355.

## Webster Computer Corp.

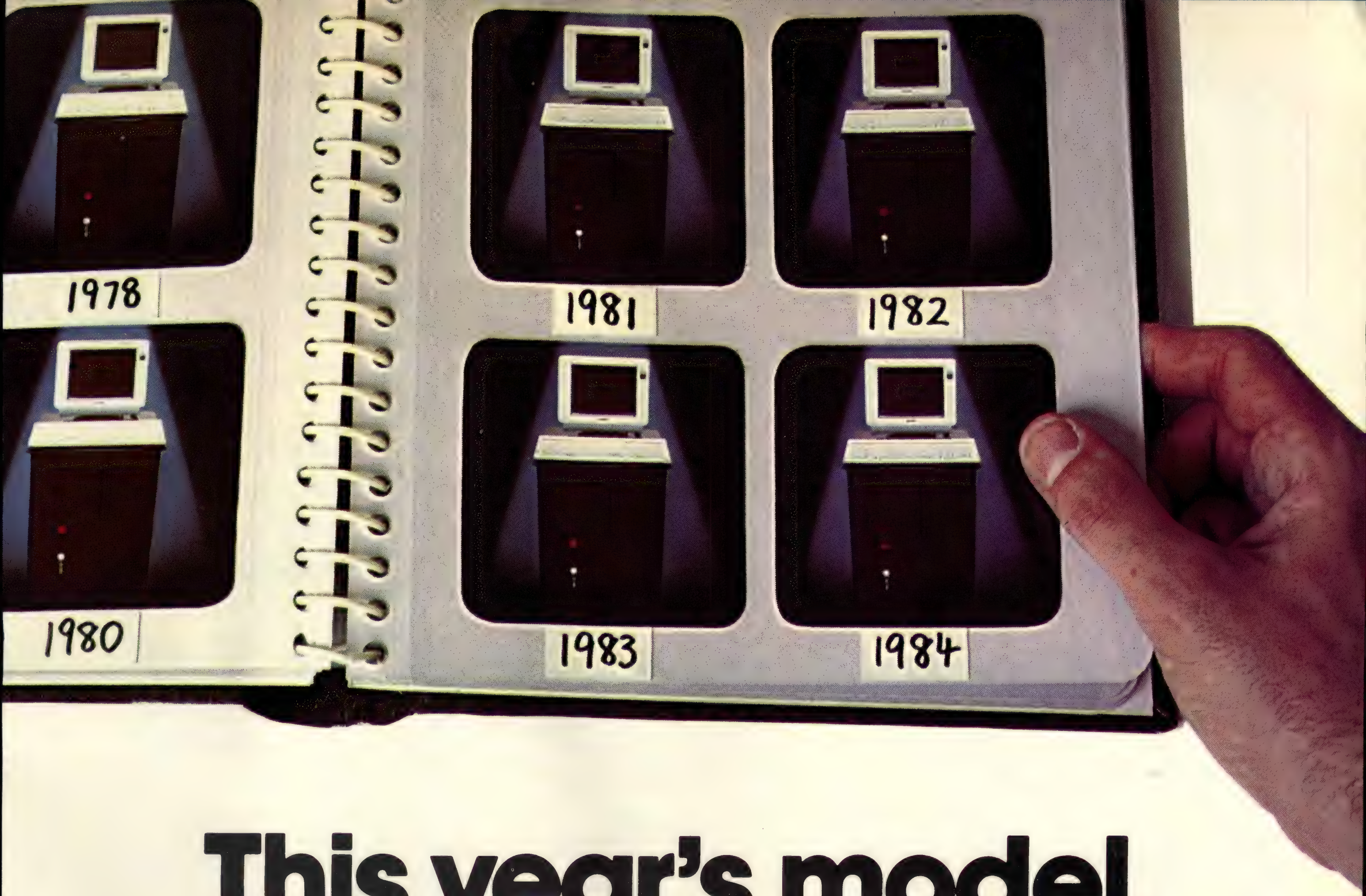
DD WEBSTER Electronics is no more; the company has changed its name to Webster Computer Corporation and has also widened its product range considerably. Sales last financial year were about $3.5 million, and the company hopes to turn over $5 million this year.

Webster has released a range of machines called the Webster Prism, and its existing *Spectrum* range is now known as the Webster Spectrum. The Prism machines are also PDP-11-based. Instead of the familiar cabinet and separate terminal, the Prism machines are designed around the workstation concept, which Wester tested when the ST97 video terminal was released.

Prism configurations can include 5¼in floppy disk drives, hard disk, cartridge, and a choice of the 11/23 and 11/73 processors. More than 600 Webster systems have been installed, and of those, six are Prism machines.

Keen to enter the lucrative add-on and board market, Webster has also diversified to include a variety of boards and computer system components to its range. The company says it has become a "multi-layer company", but will continue manufacturing computer systems.

**Webster Computer Corp,** 17 Malvern St, Bayswater, Vic 3153. Tel: (03) 729 8444.



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Here are a few Universe initiatives that have helped make it this year's model.

**1982:** Universe releases locally developed concurrency capability with MPS (Multiple program Selection) and SUPERAED enhancements to CP/M operating systems.

**1983:** Universe introduces dual 8/16 bit processing. Development work on high speed Multiuser operating systems culminates in release of MP/M 8-16, catering for simultaneous use of 8 and 16 bit software by multiple users.

**1984:** Development work at AED on 80286 processor results in sub-mini performance from Universe. AED wins government grants for earlier MPS work and further grants for work on I/O/File processor. UNIX is currently being implemented on Universe.

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### 64K Basis Medfly

| As supplied | $1275 |
|---|---|
| **Features needed to build to same level as Lingo 128:** | |
| 2 disk drives + controller | 645 |
| Extra 64K memory | 120 |
| RF modulator | 25 |
| Voice synthesizer | 35 |
| Amber monitor | 220 |
| Custom ROMs | 140 |
| Comes with 3 mths. guarantee | |
| Total | $2460 |

### Dick Smith's Cat

| As supplied | $699 |
|---|---|
| **Features needed to build to same level as Lingo 128:** | |
| 2 disk drives + controller | 847 |
| Emulator required to run Apple software | 99 |
| RF modulator | 35 |
| Z80 procesor for CP/M | 449 |
| Extra 64K memory (approx) | 120 |
| Serial adapter RS232C | 129 |
| Voice synthesizer | 35 |
| Amber monitor | 299 |
| Total | $2712 |

### Apple IIe

| As supplied | $2518 |
|---|---|
| With 80 column facility RGB color, printer port, single drive, controller, hi-res. monitor, average of quoted prices. | |
| **Extras to bring to same level as Lingo 128:** | |
| Second drive | 465 |
| 64K card | 578 |
| RF modulator | 51 |
| Voice synthesizer | 35 |
| Total | $3647 |

| | Lingo 128 | Medfly | Cat | Apple IIe |
|---|---|---|---|---|
| **Processor** | 6502 | 6502 | 6502A | 6502 |
| **Z80 processor for CP/M built-in** | YES | YES | NO | NO |
| **RAM memory standard** | 128K | 64K | 64K | 64K |
| **Enhanced microsoft basic** | YES | YES | YES | NO |
| **Size of interpreter in ROM** | 24K | NIL | 24K | 12K |
| **Numeric keypad** | YES | YES | YES | NO |
| **80 column text display built-in** | YES | YES | YES | NO |
| **Voice synthesizer included** | YES | NO | NO | NO |
| **RGB color output standard** | YES | YES | YES | NO |
| **RS232 serial adapter included** | YES | YES | NO | NO |
| **Centronics printer port included** | YES | YES | YES | NO |
| **Twin drives built-in** | YES | NO | NO | NO |
| **Data capacity of each drive** | 164K | 164K | 164K | 143.5K |
| **Whisper quiet Chinon Japanese drives** | YES | NO | NO | NO |
| **Numeric keypad** | YES | YES | YES | NO |
| **Separate process for keypad** | YES | YES | YES | NO |
| **RF modulator included** | YES | NO | NO | NO |
| **Text card included** | YES | NO | N/A | N/A |

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SAVINGS: LINGO 128
COMPARED TO

| | |
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| APPLE IIe | *$1487* |
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# AUSTRALIAN ASSEMBLERS

MANY of Australia's smaller microcomputer manufacturers entered the industry as assemblers, building S-100 bus based systems using the vast range of American processor and peripheral boards that dominated serious microcomputing in the late '70s.

Most of these companies began to design their own boards, selling them to other system builders and eventually gaining the confidence and ability to design complete systems. These companies, characterised by their use of bus-based systems, have moved from single processor Z80/ CP/M systems to multiprocessor, multi-user systems using the 80186/ TurboDOS combination or are supporting one of the less popular processors.

The second phase of assembly operations in Australia occurred in the early '80s, prompted by the development of close contact with South-East Asian distributors of microcomputer peripherals. Several Australian companies began importing Apple lookalike computers, either as fully assembled units, bare circuit boards or kits. As the market for these systems developed under the price umbrella of the Apple *IIe*, local assembly became both profitable and necessary to combat the poor quality of systems assembled in Hong Kong or Taiwan. Factory sites ranged from Sydney surburban lounge rooms to quite large operations in Melbourne.

Some of the companies have moved to IBM PC compatible computers but have not been able to generate the volume of business that would support local assembly. Only President Computers, with its large dealer network, appears confident enough to consider establishing an assembly operations for its IBM PC compatible system.

The third phase has been the establishment of assembly operations by international computer companies, interested in the offset credits, financial assistance and preferred treatment that this activity receives from governments.

## Barson Computers

BARSON Computers confirmed it will establish a plant to assemble Apricot microcomputers in Sydney.

The plant is expected to be in production by the end of the year. Two sites were under consideration at time of writing, the most likely being close to Sydney's Mascot area.

Initially, the plant will be involved in assembly only, but once sufficient staffing has been arranged, the Australian content of the machines is expected to increase. The video display section will have a high level of Australian components from the outset.

By the end of the first quarter of 1985, production is expected to be 800 units per month.

The components to be assembled will come from the UK and other places.

A British Broadcasting Corporation microcomputer plant was also expected to be announced by Barson at press time.

Barson said that the BBC plant will definitely go ahead, but a decision had yet to be made on whether it would be set up in Sydney or Melbourne.

Details concerning the BBC plant were not available, but the company did say that it would involve a higher Australian content than the Apricot assembly.

Barson already supplies peripherals for the BBC computer.

**Barson Computers,** 335 Johnston St, Abbotsford, Vic 3067. Telephone: (03) 419 3033.

## IBM

IBM's highly publicised PC plant at Wangaratta represents the company's first attempt at actually constructing computers of any kind in Australia. The plant was established to assemble IBM's successful Selectric range of typewriters, but that operation is being phased out as the PC assembly line is phased in.

The black PC chassis and a set of sub-assemblies are grouped together into a kit, which then travels down the assembly line, where it is bolted together, wired up, burned in, diagnosed and packaged. Because of the relative simplicity of these procedures, the entire operation is completed smoothly and quickly. The longest part of the assembly procedure is the three-hour burn-in.

A comprehensive barrage of tests is performed on each PC and PC XT as it moves up the line, including diagnoses of disk drives, motherboards, monitors and memory. The packaging is tested by periodically dropping a packed PC on to the plant's concrete floor from the (Australian Standard) height of 750mm, and seeing if the PC sustains damage.

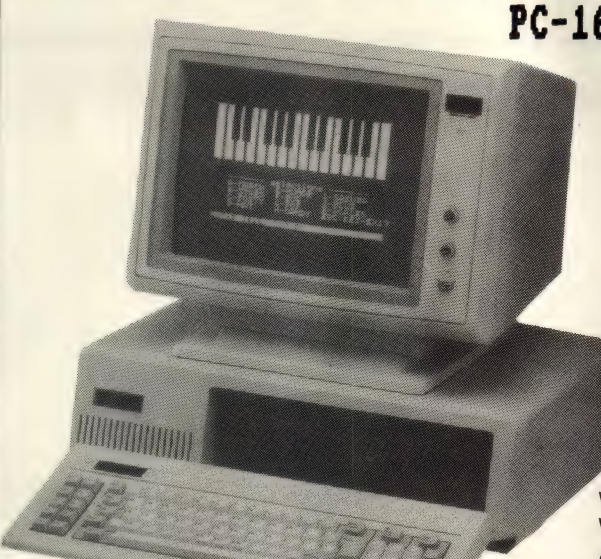
A staff of 50 works at Wangaratta, on both the PC and typewriter lines, and IBM claims it intends to increase this to almost 200 in the next five years. As the Selectric line is phased out, staff will be transferred across to PC assembly.

IBM will not assemble the Portable PC at Wangaratta, but there is a possibility that the PC AT, when released in Australia, may be assembled there. More complex members of the PC family, such as the 3270-PC, PC XT/370 and the recently announced PC AT/370 are never likely to be assembled in Australia because the almost negligible size (in international terms) of the local market.

**IBM Australia Ltd,** 168 Kent St, Sydney 2000. Tel: (02) 234 5678.

# PROFOUND

## PC-1600/XT-1600



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# Australian microcomputer manufacturing:

| COMPANY NAME | BRAND NAME | PRICE | PROCESSOR | OPERATING SYSTEMS | USER RAM | MASS SYSTEMS |
|---|---|---|---|---|---|---|
| Abacus International | Century 500 | $3500-$10,000 | Z80A 8085 | CP/M, BBasic | 64K | 1.58Mb |
| Abacus International | C1000, C4000 | $5500-$25,000 | (1-17) Z80A | TurboDOS | 256K | 10Mb |
| Abacus International | C2016 | $3000-$15,000 | 8088 | MS-DOS 2.11 | 128K-256K | 720K-75Mb |
| AED Computers | Supercomputer 1 | $7000-$10,000 | Z80 | CP/M | 64K | 2.4Mb-17.2Mb |
| AED Computers | Universe Supercomputer 2 | $1000-$13,000 | 80286<br>Z80H | CP/M, CP/M-86<br>IOS, MultiOS,<br>MP/M, MP/M-86 | 64K-1Mb | 3.6Mb-2.0Mb |
| Applied Technology | Microbee 16K | $499 | Z80A | Microworld Basic | 16K | Upgrade |
| Applied Technology | Microbee 32K | $599 | Z80A | Microworld Basic | 32K | Upgrade |
| Applied Technology | Microbee 64K | $699 | Z80A | CP/M 2.2 | 56K | 400K |
| Applied Technology | Microbee 128K | $1995 | Z80A | CP/M 2.2 | 64K | 400K |
| ASP | Ampro Series 100 | $1697-$2277 | Z80A | CP/M 2.0 | 64K | 1.6Mb |
| Ausdata | Ausdata 100 | $4500-$6500 | Z80 | CP/M 2.2, CP/M 3.0 | 64K-128K | 800K-20Mb |
| Carrot Computers | Carrot | $15,000-$200,000 | 6800, 6809 | Uniflex | 64K-1Mb | 20Mb-8Gb |
| Comprocessing | Australis | $6000 | 2x Z80A | CP/M 2.2 | 64K | 1.92Mb |
| Comprocessing | Sprite | $4500-$35,000 | Z80A per user | MDOS | 64K per user | 2Mb-40Mb |
| CMAD | CM2 | $20,000-$35,000 | 68000 | CMADOS | 2Mb | 2 x 300Mb |
| Datamax | Datamax 8000 FD | $3000 | Z80A | CP/M, CP/M 3.0 | 64K-256K | 2Mb |
| Datamax | Datamax 8000 HD | $5000-$6000 | Z80A | CP/M, CP/M 3.0 | 64K-256K | 10Mb-45Mb |
| Datamax | Datamax 8000 MHD | $6000-$7000 | Z80A | MP/M | 256K | 10Mb-45Mb |
| Datamax | 186 | $8000 | 80186 | Concurrent CP/M-86 | 512K-1Mb | 1.2M-100Mb |
| David Hartley Computer Australia | Hartley 3900 | $7000-$15,000 | 8086 | proprietary MS-DOS | 128K-874K | 720K-272Mb |
| David Hartley Computer Australia | Hartley 3923 | $7000 | 80186 | RT-86 | 128K-874K | 48Mb |
| David Hartley Computer Australia | Hartley 3923 | $15,000 | 80826 | Unix | 128K-874K | 48Mb |
| Dedicated Micro Systems | DMS4100 | $3800 | Z80B | CP/M 2.2, MP/MII | 128K | 1.2Mb |
| Dedicated Micro Systems | DMS4105 | $4500 | Z80B | CP/M 2.2, MP/MII | 128K | 2.4Mb |
| The Dewhirst Corporation | Dewhirst DBM | $4000-$60,000 | Z80B per user<br>80286/80186 | TurboDOS | 64K per user+<br>64K-1M | 1.6Gb |
| Digital Electronics | Flexi System | $10,000-$30,000 | LSI-11/23, 11/73<br>68000, 68010,<br>32032, MicroVax | RT-11, RSX,<br>Unix-3,<br>4.2 BSD | 64K-4Mb per user | 20Mb-1.2Gb |
| Digital Electronics | Pillar | $10,000-$50,000 | as above | as above | 64K-4Mb per user | 20Mb-1.2Gb |
| Digital Electronics | Unity | $10,000-$100,000 | as above | as above | 64K-4Mb per user | 20Mb-1.2Gb |
| Eracom | ERA-60 | $4500-$10,000 | 8085 | CP/M, MP/M<br>UCSD P-System | 128K-512K | 24Mb |
| Eracom | ERA-80 | $10,000-$50,000 | 8086, Z80 | CP/M-86, UNIX<br>MP/M-86 | 1MB | 500Mb |
| General Electronic Developments | Centinent | $3000 | 2 x Z80A | TurboDOS | 128K | 2.4Mb-600Mb |
| General Electronic Developments | System 85 | $3500 | 2 x Z80A | TurboDOS/<br>CP/M 2.2 | 64K | 2.4Mb-600Mb |
| JED Systems | JED STD-800 | $400 | NSC 800 | JMON | 8K-24K | 1Mb STD Bus |
| J.T. Microsystems | Dolphin | $8000-$33,000 | Z80H | TurboDOS | 64K-256K | 2.4Mb-70Mb |
| Labtam International | Labtam 3006 | $6800-$12,500 | Z80A, 8086 | CP/M, CP/M-86 | 256K-4Mb | 2.4Mb-56Mb |
| Labtam International | Labtam 3203 | $6800-$12,500 | 32032 | UNIX 5.2 | 1M-2M | 1M-150M |
| Labtam International | MU 3000 | $6800-$28,000 | Z80A, 8086 | CP/M, CP/M-86 | 384K-1Mb | 10Mb-150Mb |

# the companies and their products

| COMPANY NAME | BRAND NAME | PRICE | PROCESSOR | OPERATING SYSTEMS | USER RAM | MASS SYSTEMS |
|---|---|---|---|---|---|---|
| Macpro Computers | System 250 | $7950 | Z80 | CP/M | 64K/320K | 2 x 1.29Mb |
| Macpro Computers | Network 1250 | $15,750 | Z80 | MP/M | 320K | 10Mb |
| Macpro Computers | MBS-80 | $3295 | Z80 | CP/M | 64K | 2 x 1.292Mb |
| MF Computers | MF 2000 | $2995 | Z80A | CP/M | 64K | 2.4Mb |
| MF Computers | MF 4000 | $5995 | Z80A | CP/M | 64K | 5Mb-19Mb |
| Mica Associates | V252-IWS | $6200-$9000 | 8088, Z80A | CP/M-80, CP/M-86<br>MS-DOS 2.11 | 128K-512K | 2Mb-10Mb |
| Mica Associates | V212-RWS | $3200-$4000 | 8088 | CP/M-80, CP/M-86<br>CP/Net | 128K-512K | 2Mb-10Mb |
| Ortex Australia | Pascal System 1 | $6100-$23,000 | Microengine F&G | UCSD P-System VER. 3 | 128K | 1Mb-600Mb |
| Ortex Australia | ADA System 1 | $16,000-$33,000 | Microengine | ADA | 128K | 1Mb-600Mb |
| Ortex Australia | Net 186 | $4800-$10,000 | 80186 | MP/M-86, Sironix<br>UCSD P-System | 128K-512K | 1Mb-40Mb |
| Paris Radio | Sphere | $2280-$10,800 | 6809 | Flex | 64K-1Mb | 80Mb |
| Pennywise | Pennywise System | $10,000-$13,000 | 6809 | Uniflex | 128K-998K | 20Mb-70Mb |
| Portable Comp Co | PortaPak | $3555 | Z80B | CP/M 2.24 | 128K | 2 x 800K |
| Pericomp Computers | Pied Piper | $5000-$13,000 | Z80 | CP/M, MP/M | 64K-256K | 760K-20Mb |
| Precision Micro Systems | Series 800 | $6400 | Z80A | CP/M, MP/M<br>TurboDOS | 64K | 2.56Mb |
| Precision Micro Systems | Series 800/HD | $18,000 | Z80B/80186 | CP/M, MP/M | 64K | 10Mb-70Mb |
| Progeni | Poly-1 Console Microcomputer | $3275 | 6809 | Polysys | 64K | — |
| Progeni | Proteus | $3900 | 6809, Z80 | Polynet | 64K | 1.2Mb |
| Pulsar Electronics | 6005C | $4000 | Z80A | CP/M, MP/M | 320K | 2.6Mb |
| Pulsar Electronics | 7019C | $7130 | Z80A | CP/M, MP/M | 320K | 15Mb |
| Pulsar Electronics | 7020T | $13,869 | Z80A per user | TurboDOS | 320K | 20Mb |
| Pulsar Electronics | 8036T | $25,200 | Z80A per user | TurboDOS | 576K | 36Mb |
| Pulsar Electronics | 9000 | $23,915 | 80186 per user | TurboDOS | 1.3M | 36Mb |
| Q.T. Microcomputers | Accelerated Business Computer | | Z80, 8086 | TurboDOS | | |
| SME Systems | Titan TMC-150 | $5000-$7000 | Z80A | CP/M 3.0 | 256K | 20Mb |
| SME Systems | Titan TMC-200 | $7000-$10,000 | Z80A, Z80B | CP/M 3.0 | 256K | 20Mb |
| SME Systems | Unicorn Multi-user MPU-150 | $5000-$20,000 | Z80A, 8086 | CP/M 3.0 | 384K | 512Mb |
| SME Systems | Unicorn Multi-user MPU-150 | $6000-$40,000 | Z80A, 8086 | CP/M 3.0 | 384K | 512Mb |
| Software Aust. | Dual | $5800-$30,000 | 8085, 8086<br>80286,<br>68000 | Concurrent CP/M-86 | 128K-1Mb | 23Mb-150Mb |
| Synax Systems | Sy-50 | $3500 | Z80A | TurboDOS CP/M, CP/-86 | 128K | — |
| Synax Systems | Sy-100 | $5000-$60,000 | Z80B/H | TurboDOS, CP/M, CP/M-86 | 64-128K per user | 15-200Mb |
| Synax Systems | Sy-200 | $5000-$60,000 | 80186 | Turbo DOS<br>CP/M, CP/M-86 | 64-128K per user | 15-200Mb |
| System One | Model 500 | $3850 | Z80A | proprietary or CP/M | 64K | — |
| System One | Model 550 | $5295 | Z80A | proprietary or CP/M | 64K | 1.4Mb |
| System One | Model 800 | $8600 | Z80A | proprietary or CP/M | 64K | 4.2Mb |
| Time Office Computers | Kookaburra | $2000 | 80186 | MS-DOS | 256K CMOS | 2 x 320K Option |
| Time Office Computers | T4000 | $2000-$3000 | Z80 | CP/M | 16K | N/A |
| Time Office Computers | T4500 | $3800-$7000 | Z80A | CP/M | 96K-256K | 1Mb-15Mb |
| Webster Computer Corporaton | Spectrum Eleven | $5000-$50,000 | LSI-11 | RT11, TSX+<br>RSX-11M+ | 64K-4Mb | 2.52Mb-264Mb |

# Comings and Goings on the FRINGE

THERE has as yet been no shakeout of Australian computer manufacturers, nor are there any reliable signs of one on the horizon.

However, there has been, and there will continue to be, a trickle out, a small number of companies and products which are not quite viable together go their separate ways. The one result of this gradual rationalisation is that there has been a decrease in the number of Australian computer manufacturers in the past year and that decrease seems certain to continue.

This survey has been able to identify more companies than it did last year only because of our improved efficiency and the efforts of officers of the Federal Department of Science and Technology in identifying extra companies which had already been manufacturing in their own modest way for a number of years.

Such a definitive and complete coverage has enabled us to properly attempt to draw a line between the real general-purpose computer manufacturers who we wish to include and those on the fringes with more specialised equipment which we have tried to leave out.

Typical of those considered on the fringes are:

**Fairlight,** with its internationally acclaimed Computer Musical Instrument based on its subsequently discontinued Qasar computer,

**Office Automation,** with its Micronode 68000-based communications computer which is replacing PDP-11s as nodes in the Csironet nationwide network,

**Hero Electronics,** with what could well be a good general-purpose offering, but which is being kept for its hospitality industry market,

**AWA Data Products** Division's 8602 intelligent color terminal series with IBM PC compatibility capabilities which remains unfortunately unrecognised by AWA's retailing arm.

The net loss of Australian manufacturers is surprising considering the trend overseas is for many more new manufacturers turning up than old ones disappearing, and the noise being made in this country about government support for high technology.

In reality, what little real support has come to pass has been far more directed to propping up established manufacturers than supporting design initiatives which may result in significant new products.

The biggest disappointment in the Australian industry has been the problems of the two computers which had been identified as having the brightest prospects if they could do things right: Email Unison and Dulmont's Magnum.

Unison failed to get its performance up to standard because of the refusal of Email's technical team to effectively utilise offers of help from Unison's design team, and it is now relegated to its own internal market of petroleum distribution equipment; the company refused to comment on its prospects for re-emergence on the market.

Given hindsight, Magnum should have been kept on the shelf to mature a little longer until the 25-line liquid crystal displays became available, rather than trying to establish cash flow in Australia with an incomplete eight-line version. The market has dictated that 25-line LCD is the only acceptable standard for such a high-performance processor. Magnum has of course been picked up by one of the big guns, Time Office Computers, and is likely to re-emerge in a different and more competitive form.

Another technically excellent product, RDM's Aussie Byte single board computer, has survived the inevitable collapse of the design company when it was seduced into the pretence of manufacturing. The machine is now an important part of SME's product range.

The rule that most companies fail within their first year also applies to BGR which bankrolled what one industry wit described as "a failed second year tech hardware design student's attempt to prove his examiner wrong" by subsidising the supply of 400 computer kits to users whose only concern was how cheaply they could get a computer.

The definitive briefcase computer from Amust *also had a short life in* its original corporate structure following the demise for unrelated reasons of its Japanese shareholder of the same name, although it is still being sold from stock in an attempt to pay its Australian creditors.

Some locals have managed to follow the new US trend of major companies eventually coming back from insolvency, most notably Information Electronics which is believed to have a micro close to production as an extension to its secure terminal offerings to the Defence Department, and Australia's only original processor manufacturer CMAD which is legally prevented from commenting on its forthcoming re-emergence backed by Malaysian money.

A number of companies included in this year's survey are committed only to continuing manufacturing as long as there is demand for what may now be an aging product range, particularly in the single-user business micro area, having decided that development of a follow-up product did not make as much business sense as diversifying their activities into easier areas.

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# Have you bought a microcomputer from this man? (and where is he now?)

Sad to say, many businesses, large and small, have bought micros from fast-talking, fly-by-night salesmen just like our elusive friend, above. Not surprisingly, there are a lot of unhappy micro owners out there, with expensive mistakes to live with, and nobody to turn to.

Or is there?

## Microcomp has never lost a large corporate customer.

In sharp contrast to many of the early operators in the microcomputer field, Microcomp has always been more interested in keeping existing customers happy than in making more sales. Interestingly enough, our concentration on the former has resulted in a high volume of the latter, especially since we became an IBM Dealer (one of the very first) in early 1983.

We now have large corporate clients in many fields, Banking, Petroleum, Insurance, Retailing, Accounting, Automotive and more, plus Government and Semi-Government organisations.

Happily, they all came to stay.

## 100% of Microcomp's customers are happy.

A recent major industry survey revealed that all of the Microcomp clients surveyed are happy with the level of our service, and will buy from us again. This is far from being the case with many other microcomputer sales organisations.

Another interesting statistic from the survey revealed that over 70% of people who came to Microcomp, bought from Microcomp. Some of our competitors went as low as 6%.

## Microcomp emphasises customer support.

While we do, of course, have sales people (each of whom have more than ten years' experience in the DP field), we have the very high ratio of four trained support staff for each one in sales.

Your priorities are our priorities. You don't want to be sold–you want support.

And if you were a customer of ours, that is exactly what you'd be getting–technical support, software support, maintenance support–plus on-going R & D to make sure that when new products become viable, we'll know about it, and tell you about it.

## Microcomp is an expert at picking up the pieces.

If you have fallen prey to one of the fast-talking brigade, or if you've simply been the victim of well-meaning incompetence, help is at hand. Through necessity, we have coped with many of these problems, some of them probably very similar to yours.

And we've solved them, in a logical, economical way. The results of the survey mentioned earlier tells you the rest of the story. Some large corporate clients had changed suppliers several times before coming to Microcomp. Not one of them has changed again.

## The buck stops here.

If you want expert, responsible, cost-effective support for your IBM microcomputers, look no further. While we are, as we've said, dedicated to keeping current clients happy, we are also dedicated to controlled growth of our own company, and new clients are welcome. Once you are a client, you'll enjoy a level of service and commitment that you've probably despaired of finding.

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**A host of companies is producing microcomputers in Australia. Labtam has risen from the crowd over the past 12 months to become a leading manufacturer of versatile and powerful machines. Tony Smith reviews the performance of the company and one of its computers.**

# LABTAM LEAPING Above the Ruck

A YEAR ago, Labtam was just another second-ranking Australian computer manufacturer. It had an interesting product, a promising degree of outside support and a successful track record with exporting scientific instruments.

Labtam has since managed to get its act together, emerging from the ruck to become indisputably one of Australia's leading manufacturers, with improving local sales performance to back up some outstanding achievements overseas. More important, it has undergone the essential transformation from a company producing technically excellent computers to one capable of selling them to real commercial customers.

Labtam packages its product in two basic lines: the desktop (filling) 3006, which sticks to Labtam's first computer design with a minimal concession to ergonomics in the form of a detachable low-profile keyboard, and the floor-mounted 3015 which is particularly aimed at the multi-user environment using the increasingly popular "tower" cabinet design.

Reviewing a Labtam computer is hardly sufficient to do justice to the company's offerings; there is virtually no such thing as a standard configuration of either the 3006 or the 3015. Each client can be supplied with a combinations of features to best meet particular requirements.

This variability is achieved through allocating a large amount of front panel space for any combination of 8in and 5¼in floppy disk drives and Winchesters, with up to three drives in the 3006 and three accessible drives and two internal Winchesters in the 3015.

Multibus architecture enables configurations to be varied further with different combinations of processors and memory. It also allows access to a number of Labtam specialist products from its instrumentation market, such as analogue to digital converters and an optional IEEE-488 interface.

But one area in which Labtam offers little choice is in terminals. Many other high-capacity microcomputer vendors provide considerable choice through third-party equipment. All Labtam variations use the same screen and keyboard which incorporate some features.

Each Labtam has the same Hall effect keyboard with a central alpha zone bordered symmetrically on either side by a cursor movement cluster and a numeric cluster. The alpha zone contains 14 transparent programmable function keys along its top edge, each of which can be defined as any string of up to 256 characters.

A relatively high-resolution graphic screen is also standard with all configurations, so much so that the second and subsequent terminals of a multi-user configuration require their own local processing capability to be housed in a separate box sitting under the terminal. Graphics resolution is 600 lines of 800 pixels with one intensity level, or 300 lines (also of 800 pixels) each of which can be low, normal or high intensity.

Two principal character sizes are defined, the larger providing a conventional 80 character by 25 line format, the smaller providing 30 lines of 132 characters.

But Labtam's implementation of almost all of Digital Equipment Corp's Regis graphics language, plus some consistent extensions, enables soft definition of character size as multiples of the supplied font definitions, and of character location on the screen to any pixel position. The Labtam Regis graphics commands are embedded in the stream of characters sent to the terminal for

**The new-look Labtam desktop computers are now available off the shelf.**

display, thus enabling the graphics to be activated from any application, irrespective of the development language. Regis graphics use simple line and circle drawing primitives combined with patterning and shading to provide many commercially useful graphic effects, although they stop short of the full bit-map manipulation and more complex shape definition provided on some more recent systems.

## PROCESSOR ARCHITECTURE

Many performance-oriented innovations in Labtam's processor architecture should satisfy the most hardened computer buff, placing it far ahead of any comparable machine for many serious computing applications. While its 8-bit CP/M applications only run on a 4MHz Z80A, they usually run much faster than on other machines with faster chips because all the CP/M operating system calls activate equivalent routines running on an 8MHz 8086 which have been provided by Labtam to emulate the CP/M environment.

Extensive full-track buffering of disk accesses serves to drastically improve the speed of almost all software, with user choice of from two to 14-track buffers and a typical minimum of six enabling directory tracks to be retained in memory.

While memory cards of up to one M-byte are available, most memory generally comes in smaller allocations on processor cards. The reviewed system had 128K-bytes on its Z80 card, 128K-bytes on a second 8086, all of which was available, at least to the 16-bit processors.

To show off the speed of the screen drivers, Labtam has two operating system commands: FAST and SLOW, to vary the speed at which the screen scrolls. For long text documents, SLOW was still too fast for reading on the way past. I was left with the firm impression that from the moment it was switched on, Labtam was an extraordinarily fast computer by every measure of operational performance.

## PERIPHERALS

The wide choice of disk drive combinations is another factor which makes Labtam particularly suitable for serious computer applications. The philosophy behind the offerings seems to be 8in floppy disks are the preferred interchange media because of their higher capacity, while the 5¼in variety are mainly used to provide access to data from other systems. While only floppy disk configurations are available, Labtam has recognised the power of its product by emphasising hard-disk versions.

There are very few restrictions on how the various drives offered can be combined within the large space available for them in both the 3006 and 3015. The back panel of the 3006 gives a first impression of being congested with communications ports, with only one of the two printer ports being of any real importance for most single user applications. It was possible to complete the review without plugging anything into any of them, other than the keyboard.

While only one port, IEEE-488, is actually an optional extra, the equipment to attach to the parallel input, light pen and joystick ports are also options which require support from application software, although all the internal hardware is standard. The four bi-directional serial ports, apart from remote communications, are mostly useful in a multi-user environment where they can be driven to communicate synchronously at up to 800K-baud with other Labtam terminals.

## SOFTWARE

Labtam is intended to run widely available application packages and to provide an environment for the development of original application software, so the software environment it shows the user is quite conventional except for speed. But in the area of underlying system software, which makes it all hang together, Labtam has been the focus of some outstanding original work, including the 16-bit emulator of 8-bit CP/M. It also pioneered the implementation of the MP/M-86 and Concurrent CP/M-86 operating systems. As well as the operating systems, a number of utility programs are provided which are handy in a conventional computing environment, consistent with Labtam's design philosophy.

## DOCUMENTATION

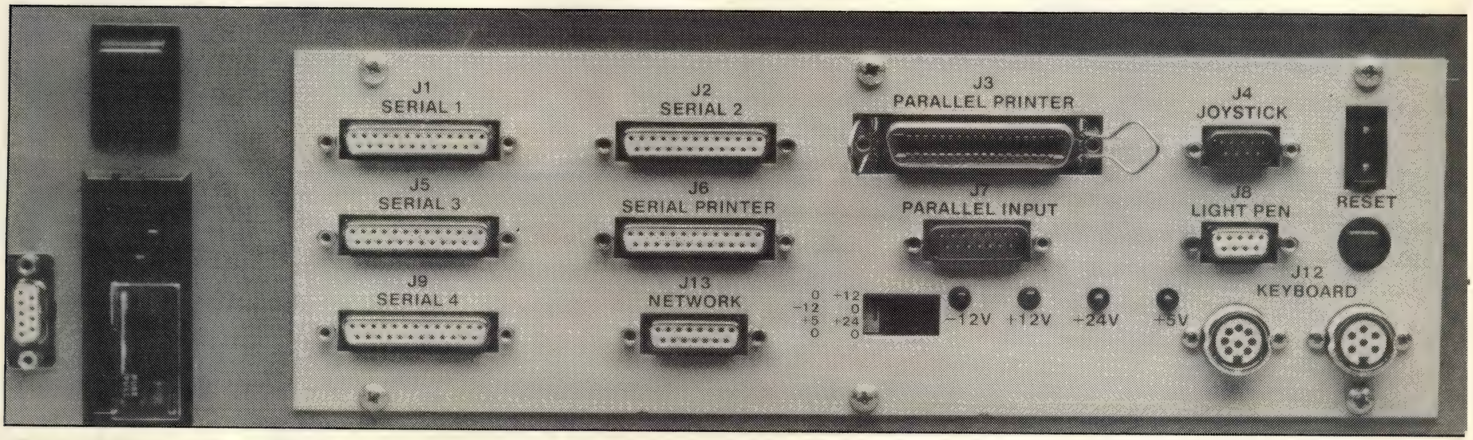
For the kind of computer that Labtam is, the documentation provided proved to be generally adequate and properly targeted, although the company is threatening to pad out its currently manageable single volume into separate volumes for its three constituent parts: User Manual, System Manual and Video Terminal Manual. Each of these major sections of the single volume is well and economically presented with a comprehensive table of contents. There is good use of diagrams and illustrations.

The documentation has to be viewed in the same light as the computer itself — it is useful for serious computing and a long way away from the simplistic handholding requirements of more popular personal computing. One negative aspect of the documentation, even though it is a common fault nowadays, is the lack of an alphabetical index, making things a bit harder for new users. But this is hardly likely to matter long to anyone working regularly with it.

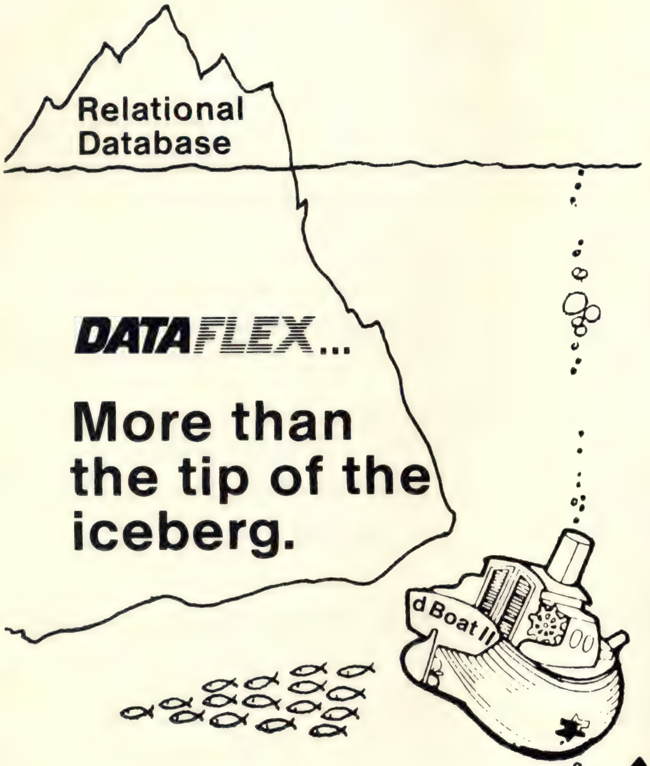
## INSTALLATION AND SUPPORT

While the desktop unit is so bulky that it takes two people to move it easily, it only had to be switched on to be up and running when put in its operating location.

The cover was removed to install



**The backplane of the Labtam appears congested with communication ports.**



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an extra memory board soon after the system arrived and was left off for the next fortnight without any adverse effects. Several versions of programs were corrupt when delivered with the system, causing inappropriate "insufficient memory" errors, but no new errors occurred during the review period despite the machine being tried out by some CP/M hackers.

Labtam has a national support contract to back up its own service from its own offices, but this doesn't detract from the major advantage of buying direct from an innovative Australian manufacturer. If you need support with a problem or to meet a need, the place where the buck stops is within easy reach. The computer is one which must attract the kind of user who considers that local access to the designer could be of real and practical use.

# GROWTH AND INNOVATION

LABTAM International Pty Ltd has completed much of the transformation in the last year from being a designer-driven company to being a market-driven company, without sacrificing its inclination for technical excellence.

It has joined forces with another Australian computer maker and recruited a new type of staff to add professionalism to its sales and marketing. It has expanded facilities to enable it to mount the production volumes its marketing demands, continued substantial leading-edge research and has established a business structure able to support the growth. The mutual representation arrangements made with Eracom, of Queensland, are one of the most significant and mature initiatives yet undertaken by an Australian manufacturer. They recognise what has long been obvious to observers — that most local computer manufacturers produce complementary rather than competitive products.

Eracom represents Labtam in Queensland, through its new Brisbane offices, while Labtam represents Eracom in Victoria. Staff recruitment has concentrated on marketing and sales support. Labtam has become a collection point for some of the most innovative computer thinkers in Melbourne. Among recruits are a pioneer of the computer staff placement industry, Andy Bugal, and early contributors to Australian Micro Computerworld, Mike Clark and Brenton Groves.

Despite the growth in staff numbers, turnover remains low. The founding directors, Don Dryden and Heimo Eberhardt, have managed to retain control with the original shareholders, despite a 40 per cent equity being sold recently to venture capitaists Pratt & Co Financial Services to finance growth.

Labtam has been wanting to develop the block of land it owns next to its Braeside premises for a long time. Sales, administration, and research and development facilities are now being built on the block; manufacturing has moved into rented premises across the street. But the company says the rate of growth is so great that, by the time the extensions are ready, it will have to continue renting.

Labtam computers have traditionally been built to order, but the company has decided to make the most popular configurations of the desktop model available off the shelf. Production will be lifted from 40 computers a month to about 100 as more promising sales opportunities come to fruition. A new wave soldering machine, being used only one day a week, will see more use.

As well as its continued success in China and Europe, Labtam recently notched its most important Australian order from National Mutual. Users at the company, who had wanted the units for some time, had great trouble getting past their strongly IBM-oriented data processing department. To ensure there are no problems maintaining sales to some politically sensitive overseas markets, Labtam has arranged to secure supplies of critical components from outside the US, thus making the company less vulnerable to any export restriction from the US.

Labtam made a bold decision to axe what had risked becoming a "me too" development of Motorola 68000-based Unix capabilities in favor of the more advanced architecture and early full 32-bit processing capacity of NatSemi's 32032. By the time you read this, the first alpha test version of the NatSemi-based Unix system will have been installed, with volume shipments expected in four months. There is also a strong rumor that the company will start producing an advanced multi-processor system with the power of many available mainframes, possibly because of joint efforts with Eracom.

Labtam's keen participation in the government-sponsored Australian Foundation for Computer Literacy seminar last year on Marketing Native Technology seems to have already more than paid back the community's cost for that seminar.

## CONCLUSIONS

Labtam has been not inaccurately described as Hewlett-Packard (quality) at an IBM (competitive) price. For somebody serious about computing in a CP/M-related environment and who is interested in power and performance, it stands out as an excellent choice. For some applications, its extraordinary performance may make it the only viable choice.

Labtam's limitations may be that it is over featured for a number of applications. On the other hand, its lack of choice in certain standard areas such as display and keyboard, may not suit all user requirements. If they do suit, they will most likely suit extremely well.

If you want an easy personal computer, forget Labtam. But if you want serious computing at personal computing prices, it may even matter that you are doing the right thing by buying Australian. **m**

Australian micro COMPUTERWORLD

**HARDWARE REPORT CARD**

## Labtam 3006

| | Poor | Fair | Good | Excellent |
|---|---|---|---|---|
| **Setup** | ☐ | ☐ | ● | ☐ |
| **Ease of Use** | ☐ | ● | ☐ | ☐ |
| **Performance** | ☐ | ☐ | ☐ | ● |
| **Documentation** | ☐ | ☐ | ● | ☐ |
| **Serviceability** | ☐ | ☐ | ● | ☐ |

**System features:**

One or more Intel 8086 (8MHz)
Zilog Z80A (4MHz).
256K RAM (expandable)
One 1.2M 8in floppy disk drive, one 10M 5¼in Winchester disk.
4 serial, 1 Centronics, network port, 3 multibus expansion slots
detached low profile keyboard,
12in green phosphor display
25 x 80 or 30 x 132 text,
800 x 600bit map graphics.

**Operating systems:**

CP/M-86, CP/M 2.2 (runs on Z80 card), MP/M-86 (optional), MS-DOS (optional).

**Price:**

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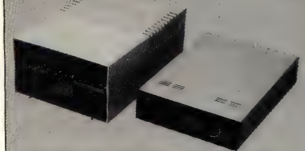

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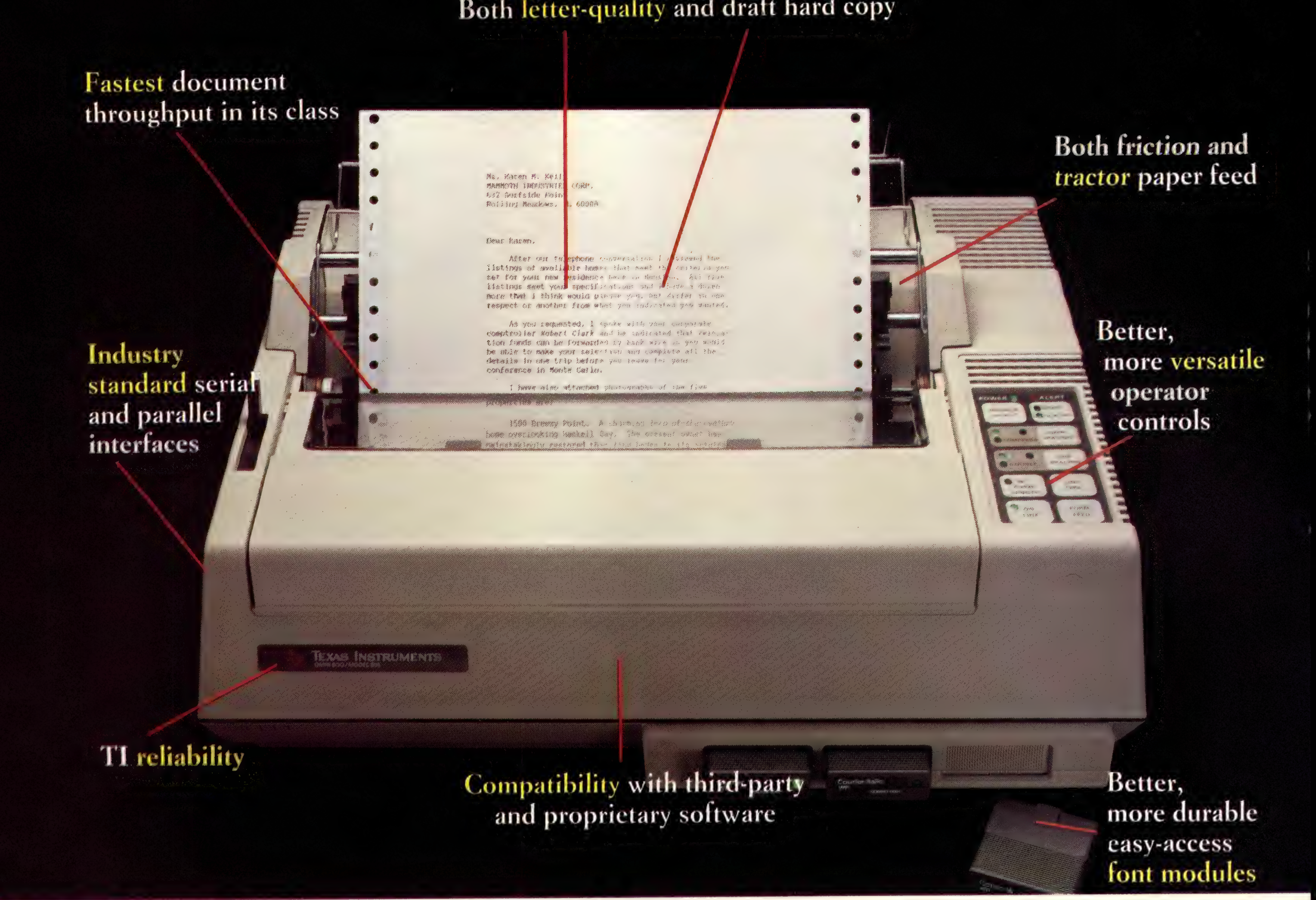
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**The most successful micro database management system, dBase II, has at last been fully upgraded to 16-bit operation with the release of dBase III. John McBain tested the new package and found that, while it is a powerful package, it has a few annoying drawbacks.**

# Stepping up to dBASE III

ASHTON-TATE's new product, dBase III, follows the same format which made its still active predecessor, dBase II, so highly successful. It allows dBase II users to upgrade most of their work relatively easily to exploit the extra capabilities of dBase III. But they should not expect vast speed improvements from the new package.

dBase III is described as a relational database management system which allows the user to enter information into and manipulate information on a microcomputer, and then present that information — either onscreen or in print — in a highly structured form.

Since I have been a dedicated user of dBase II for some 12 months I looked forward to using dBase III with considerable interest.

There are certain obvious differences between the two, such as the fact that dBase III is specifically designed to run on 16-bit IBM (or 100 per cent compatible) machines. Also, dBase III is written in C rather than the assembly language of its predecessor.

dBase II was originally written for 8-bit microcomputers and, although it is used on 16-bit machines, including IBM and compatibles, it doesn't work as well on them as on the 8-bit machines.

On the other hand, there are sufficient similarities, so that an experienced dBase II user will have no problem mastering the new package.

## SYSTEM PARAMETERS

The minimum system requirements needed to use dBase III are an IBM PC (or 100 per cent compatible), 256K-bytes of RAM, MS-DOS or PC-DOS Version 2.0 or greater, two 360K-byte floppy disk drives (or one floppy and one hard disk) and an 80-column printer. Formats suitable for other computers will be released later.

Operational limitations consist of:

□ 1000 million records (containing a maximum 2000 million bytes) per database

□ 128 fields of 254 bytes per record, with a limit of 4000 bytes per record — this limitation is not absolute, however, since every field can be defined as a memo field (of 4K-bytes each) and therefore a record could be 512K-bytes long

□ 15 open files of all types at one time — 10 open database files at any one time, with seven open index and one open format file per active database file

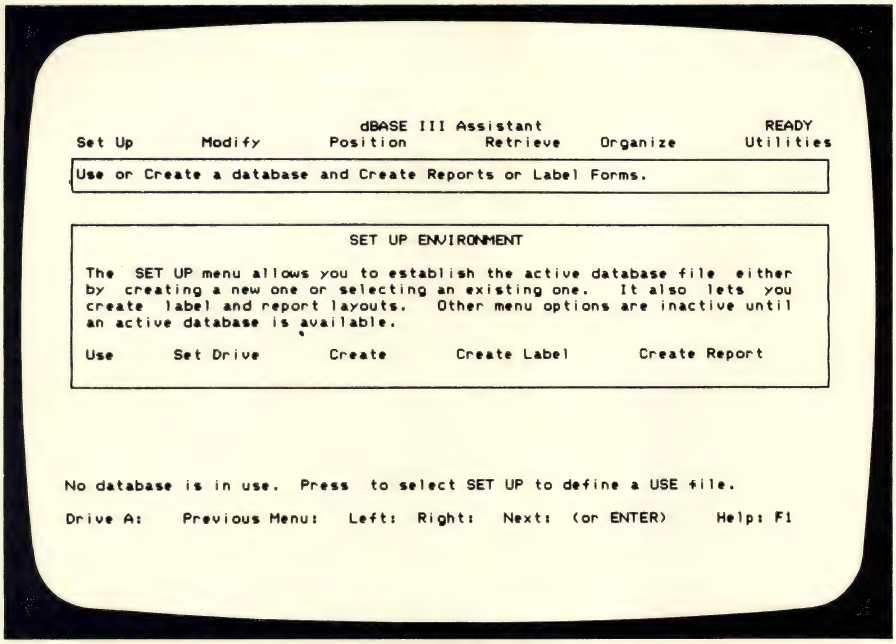
Numeric accuracy is 15.9 digits.

Field types and limits are: character — 254 bytes maximum; numeric — 19 bytes; logical — 1 byte; date — 8 bytes; memo — 4K-bytes maximum.

The minimum system described earlier is precisely that — to use the full features of the package you would require more than the minimum memory and for any serious application a hard disk would be essential.

Even with the minimum configuration, one limitation applies: the RUN command, which permits you to use external COM/EXE files and DOS commands from within dBase III, won't work with the 256K-bytes of memory.

In a twin floppy disk system storage, too, is at a premium. I have sufficient memory on my machine to use the RUN command (384K-bytes of memory) for programs such as WordStar but it is impractical to do so because I am restricted by a floppy-only system. I simply cannot fit all the required files on the system



```
                      dBASE III Assistant                          READY
Set Up      Modify      Position      Retrieve    Organize       Utilities
Use or Create a database and Create Reports or Label Forms.

                        SET UP ENVIRONMENT

 The  SET UP menu allows you to establish the active database file  either
 by  creating a new one or selecting an existing one.   It also  lets  you
 create  label and report layouts.   Other menu options are inactive until
 an active database is available.

 Use      Set Drive        Create        Create Label        Create Report




No database is in use.  Press  to select SET UP to define a USE file.

Drive A:    Previous Menu:   Left:  Right:   Next:  (or ENTER)     Help: F1
```

**dBase III Assistant screen, explaining the SETUP function.**

to effectively use this function.

Even restricting operations to a fully integrated dBase III system alone — with several databases, indexes, report formats, and so on — would very soon exceed the total storage available on two floppy disk drives. And if you aren't using a large and complex database system, why bother using dBase III at all?

The package is delivered as three floppy disks and a quarto-size three-ring binder containing the documentation.

Two of these disks, a master and backup, contain all the operational dBase III files. The third contains the system utilities and sample programs — the utilities are also discussed in some detail later.

The reason for having a main disk and a backup is that all of dBase III, except the utilities and samples, is delivered on PROLOKed disks.

This means that the main system disk *must* be in one of the drives each time the system is loaded — otherwise it will not run. This applies equally to floppy and hard disk systems.

There is no restriction on copying the files — the system just won't work without the PROLOKed disk.

Ashton-Tate will replace any damaged disk for 20 dollars (I assume that the local distributor will also follow that practice) but in a commercial application the timing could be critical.

PROLOKed disks are the one main objection I have against using dBase III, and the reason why I would be unwilling to use it for any serious application without a great deal of thought.

## BASIC DESCRIPTION

Quite apart from the inevitable comparisons with dBase II, dBase III is a very comprehensive and, above all, well designed package.

The first-time user is very well catered for with a comprehensive tutorial in the manual plus the "Assist" facility. This is a menu-driven facility which permits the user to create and use a database; set up a label or report form; add / amend / delete / locate records, sum and total information in the database, and so on. Any command which can be issued from the keyboard is available in "Assist", without the user having to worry about correct format or syntax.

The novice can see how all the commands work by actually using them with the system. "Assist" is in addition to a very comprehensive online "Help" facility, and tends to make dBase III far more "user-friendly" than dBase II ever was.

The following observations illustrate my point (some are basic to the design of the new package while others are cosmetic changes).

Creation of a new database (and modification of an existing one) is now done on a preformatted screen which provides status information on the database being created or modified.

The top of the screen displays the total number of bytes remaining (from the 4000-byte maximum) and the number of fields which have been defined.

The bottom line has a status message which advises which of the four elements of the field (name/type/size/number of decimals, if any) are being defined and the type of entry allowed in that field.

The remainder of the screen is used for entering field definitions. The ⟨Return⟩ and ⟨Backspace⟩ keys are used to move backwards and forwards, if necessary, across the four elements.

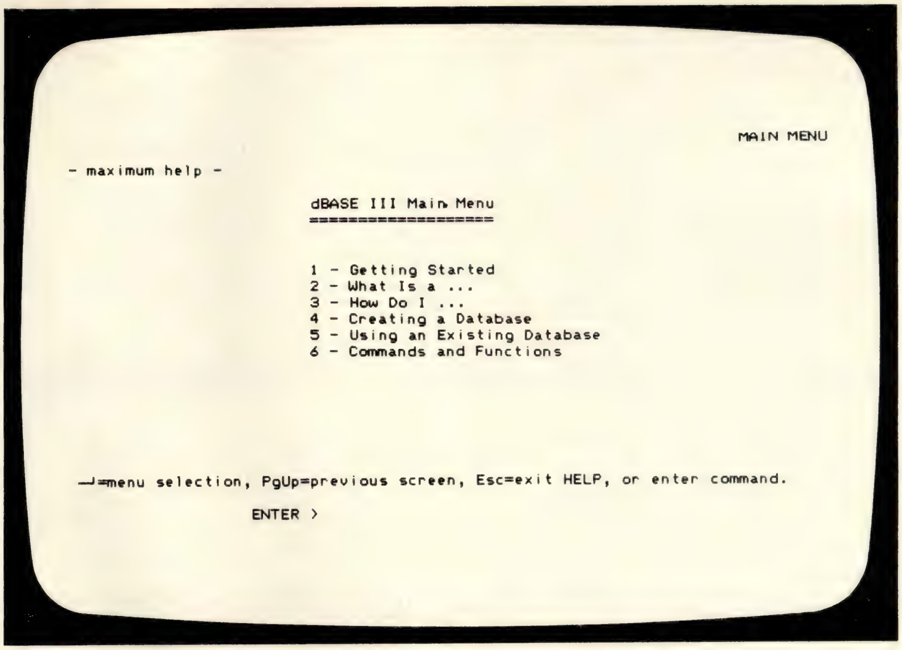
After entering the field name the user moves to the "type" element (which is already set to "character/text" as the default). If one wants that particular field to be numeric, logical, date or memo data, pressing the space bar makes display step through the field types permitted.

After specifying the field type one defines the number of characters in the field and, for "numeric" fields, the number of decimals. If other than numeric data are specified the user is taken straight on to the next field definition.

Cosmetic changes have been made to the way a database structure is presented for display or modification.

When the database is displayed the system pauses after displaying a full screen of information and waits for a key-press — which is far better than the dBase II method of having to press ⟨Control⟩ -S to pause the display.

For modifying, the database entry screen is presented in two columns — this means that most standard databases will fit on a single screen



```
                                                              MAIN MENU
 - maximum help -

                          dBASE III Main Menu
                          ===================


                          1 - Getting Started
                          2 - What Is a ...
                          3 - How Do I ...
                          4 - Creating a Database
                          5 - Using an Existing Database
                          6 - Commands and Functions




     ↵=menu selection, PgUp=previous screen, Esc=exit HELP, or enter command.

                     ENTER >
```

**dBase III main help screen, with help set to maximum level.**

and can be viewed in total.

More important and far from simply cosmetic is the change that allows an existing database to be modified without losing its data.

dBase II requires the user to create a temporary database, change the existing one and then copy the information back from the temporary one. Under dBase III the database is simply amended and the data — or at least that which will fit in the newly structured database — is present in the modified format.

Changes were also made to the report form generator — which controls the generation of a report which will detail any specific part of the information in the database, including sub-totals and totals on various fields. It too is now menu-driven and one can move backwards and forwards through the report definition until satisfied with it.

All fields from the relevant database are displayed on screen and various options, with full explanation, are presented as they become available. The ability to modify an existing report form is also available from the report generation screen.

Other new facilities, or changes to existing facilities available under dBase II, include:

☐ the ability to use the command ⟨@ row,column⟩ to clear that portion of the line specified by row and column, or ⟨@ row,column Clear⟩ to clear a window on the screen with the top/left corner specified by row and column

☐ the addition of square root, logarithm and exponential functions

☐ the addition of a SET COLOR TO sequence which allows control and specification of screen attributes. Both upper- to lower-case and lower- to upper-case conversion of characters is supported

☐ the addition of a TIME () function which gives access to the system time — useful for date/time stamping record additions or amendments

☐ making date available as a specific field, and allowing it to be stored in Julian format (YYDDD), makes the comparison of records on a date basis very easy.

☐ the CTOD () function has been added to allow any dBase II date fields, stored in MM/DD/YY format, to be directly converted

☐ the Picture clause also includes, among other things, the ability to display the DATE() function in DD/MM/YY format rather than the standard MM/DD/YY.

☐ memory variables (memvars) have been increased from the dBase II limit of 64 to a far more realistic 256 — with a limit of 6K-bytes total storage for memvars.

A further change makes a specified memvar valid only in the calling file rather than throughout the system. If a value from a memvar is required outside that file it can be passed from one file to the next by using the newly created PARAMETERS option.

Adding a memo field was an excellent idea. When entering data into this field the user is placed in the dBase word processor (more on that later) and can be allowed to enter up to two screens of information in free format.

Under dBase II it is difficult to enter a large and variable data field, especially since field entry uses the dBase II line editor (which was always one of the things I liked least about that package). But using the dBase III memo field makes this an easy task.

Other changes include:

☐ you can now say A=B as well as the dBase II statement Store B to A

☐ the erase statement no longer clears the screen (this is now handled by Clear), but instead is used to erase a file — Erase filespec. This brings it into line with the MS-DOS command

☐ when a command sequence contains an error the system no longer simply advises you that an error exists and presents the chance to amend it, as was the case with dBase II. (It was often difficult to see where the mistake was — whether it was simply a typing error or something wrong with the actual syntax.) Instead, dBase III gives the option of asking for "Help" to locate the error

☐ & macros can no longer be used in a DO WHILE statement line and shouldn't be used in IF/ENDIF or DO CASE statement lines.

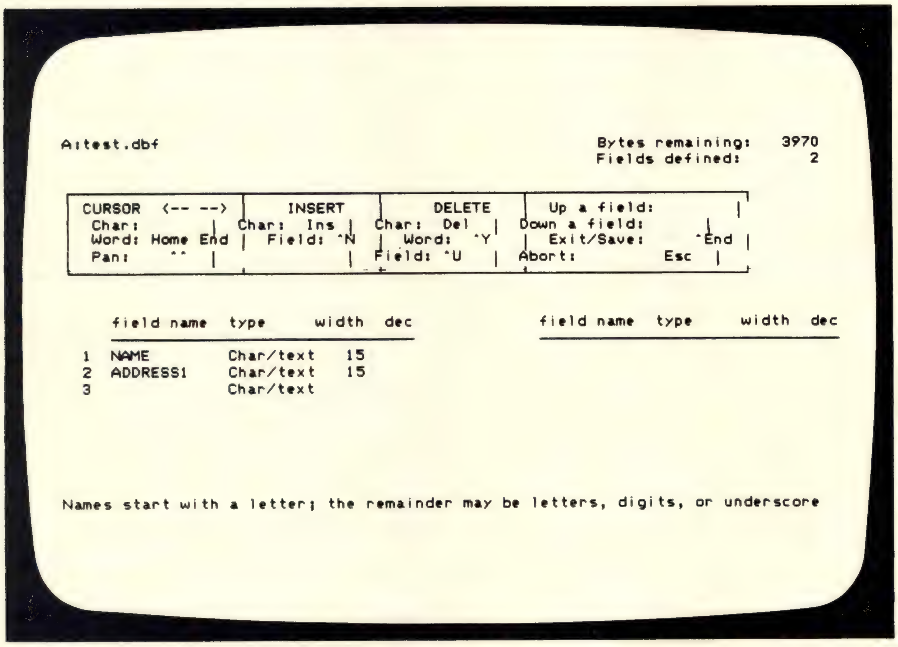
This point is especially mentioned in the Errata sheets which come with the manual which explain that this restriction only applies to using macros in the initial statement line of the loop — for example, DO WHILE &macro. Macros do work perfectly well elsewhere.

These are just a few of the features available under dBase III — or changed from the equivalent dBase

II features — but they give some idea of the level of thought which has gone into the entire package.

One refinement deserving special mention is the dBase III word processor. It is used to create and modify dBase command files and for entering data into a memo field.

Anyone used to WordStar will have no problem using the dBase III word processor — the control keys are identically defined (although you can also use the IBM cursor control keys), and most of the relevant WordStar functions have also been implemented.



```
A:test.dbf                                              Bytes remaining:   3970
                                                        Fields defined:       2

 CURSOR  <-- -->  |     INSERT     |     DELETE      |  Up a field:          |
  Char:           | Char:   Ins    | Char:   Del     | Down a field:         |
  Word: Home End  |  Field: ^N     |  Word:   ^Y     |  Exit/Save:      ^End |
  Pan:      ^^    |                | Field: ^U       | Abort:           Esc  |

      field name  type      width  dec         field name  type      width  dec

  1   NAME        Char/text    15
  2   ADDRESS1    Char/text    15
  3               Char/text

Names start with a letter; the remainder may be letters, digits, or underscore
```

**Screen used in defining a database, with editing keys displayed.**

The major WordStar-like function which would have been very useful but which has not been implemented is the block copy / move / delete facility.

This word processor is an enormous improvement over the rather poor dBase II line processor but it has one major fault — it will only handle a file with a maximum size. It is a great shame that such a ridiculous limitation was placed on its use — maybe Version 2 of dBase III will fix this.

One of the first considerations for serious database users must be speed — which has always been a problem with dBase II.

## PERFORMANCE

dBase III is faster in some areas and slower in others (see the benchtest results), although one factor has a considerable effect on the results obtained.

Included on the dBase III disks is a file called CONFIG.SYS, and this is mentioned on the Errata sheets.

Basically, this file sets up the system parameters to allow the maximum number of 20 files to be open at any one time — default under DOS is eight — and it also allows specification of the number of buffers which will be used. I found that, when I did not specify the 24 buffers the Errata sheets recommend, the benchtest took three times as long to run!

dBase III fails badly in APPENDing records to a database. It is appreciably slower than dBase II (68 minutes for 1500 records under dBase III against 35 minutes under dBase II)!

Although this would not matter during normal operations, such as when a single record is being entered a field at a time, it is important during some database maintenance procedures. Any procedure which requires manipulation of a large number of records is going to have problems.

Overall, if you are looking for a vast speed improvement from dBase II to dBase III you are going to be disappointed. The benchmarks show some speed improvements — and some losses.

In addition to the benchmarks I also ran a test which simply manipulates a number of memvars within a loop using addition, subtraction, multiplication, division and string conversion. It is therefore independent of both screen and disk transfer speed restrictions.

To run the test on my TeleVideo PC took 1h32min56sec under dBase III as against 1h51min50sec under dBase II, indicating that dBase III is faster than dBase II during straight processing.

I should point out that I also ran the same test on an 8-bit Morrow Microdecision II under dBase III and it took 1hr14min6sec — I leave any conclusions to the reader.

The package comes into its own within a command file structure. The extra facilities and functions incorporated into dBase III make it fairly easy to create some very complex systems.

I created a test system which included a diary/forward plan calendar —using the date and memo fields — and a rewritten version of an assets register system I've been using under dBase II.

Both systems were very much easier to implement under dBase III and I believe this would be true with other systems which are either very difficult or impossible under dBase II.

One great advantage dBase III has over dBase II is the ability to have up to 10 databases active at any one time, each referred to by its own user-defined alias. This leaves the Primary/Secondary facility of dBase II a very poor second.

Unfortunately, the overall system restriction of 15 open files at any one time rather limits the value of this facility, which has its greatest potential in a large integrated system.

After creating the necessary command and format files for a test system, together with just three databases indexed on a single field each, I found that I had used 12 files. It therefore seems unlikely that you would be able to *run* a system with 10 open databases, although even three or four are very useful.

## UTILITIES

Two utilities come with dBase III, dFormat and dConvert.

dConvert will probably be one of the first points of contact with dBase III for the dBase II user who has decided to upgrade.

It is a menu-driven utility which makes a copy of the dBase II file in dBase III command format.

When it has finished it specifies the percentage of the file which has been properly converted and then changes the last character on the dBase II file type to B for example TEST.PRG to TEST.PRB) to distinguish between two files.

I have used it with some 30 files — command, format and database — and it has converted more than 95 per cent of each with very few problems.

In most instances, when the system cannot directly convert a command sequence it will simply mark the line concerned in the dBase III file and leave it to you to work out how to change it.

This procedure is generally satisfactory but some command sequences, which dConvert lists as being 100 per cent converted will not work as desired under dBase III.

I encountered two examples of this type of problem — quite probably others will be discovered as the package is used more — and since neither of them was an obvious error every converted file should be tested before being put into production use. Although the code may look perfect it could still crash because of differences between dBase II and dBase III.

The first problem occured when I converted a file which used a formula containing the variable Y — dConvert translated this into the logical variable .Y., rather than the memvar it was, and there was no warning of this change. The same problem would occur with any other logical variable (T,F,N) so this should be watched.

The second problem illustrates the situation where a correct dBase III sequence, translated correctly from dBase II, doesn't operate in the same way under the two packages.

The dBase II command sequence ⟨SET FORMAT TO format — READ — SET FORMAT TO SCREEN⟩ will display a (record input) screen in the specified format, allow input into that screen and then return control

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to the unspecified format so that an ⟨@..SAY..GET — READ⟩ sequence, for instance, can be issued from the command file.

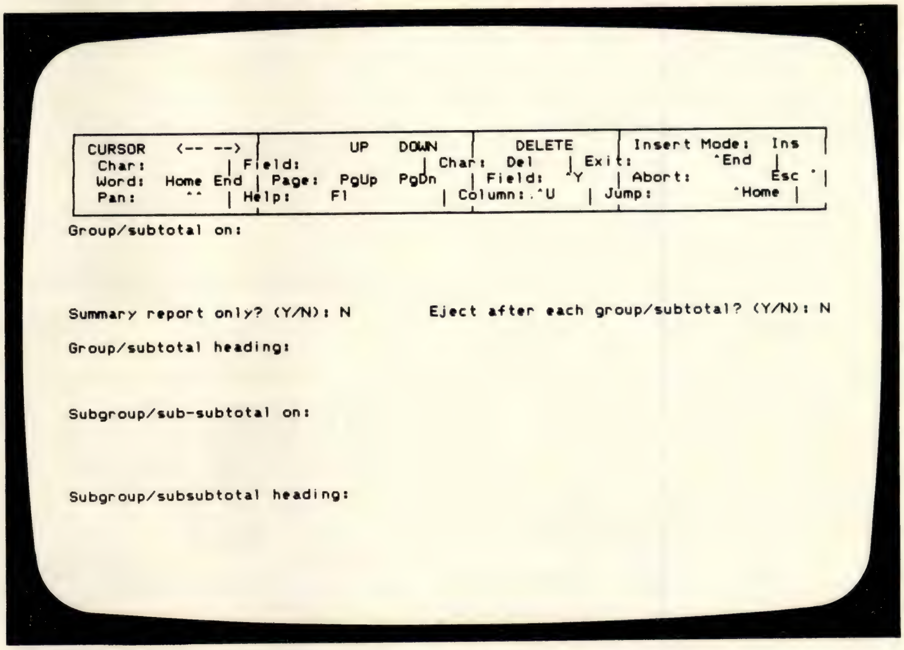
dConvert converts this to the equivalent dBase III sequence but when run it won't work properly. An extra command, ⟨CLOSE FORMAT⟩, must be issued after the first Read command, or the system will continue to use the FMT file and ignore any ⟨@..SAY..GET — READ⟩ issued from the command file.

These two problems were the only ones I encountered during the conversion of all 30 files, although others may exist.

On the whole, dConvert worked very well, and, so long as the files being converted contain fairly standard command sequences, few problems should be encountered.

Anyone who has used the dBase II utility ZIP will feel quite at home with dFormat. It performs the same function — creating format files — and the main difference is that it is larger and, seemingly, needlessly more complex.

dFormat permits you to create that file in a far simpler fashion than having to work out the positions of each desired field and then type in the necessary @ prompts, database field names and embedded dBase commands. dFormat automatically writes a dBase FMT file to perform that function.



```
 CURSOR   <-- -->  |        UP    DOWN    |    DELETE      | Insert Mode:   Ins |
  Char:            | Field:               | Char:  Del     | Exit:       ^End   |
  Word:  Home End  | Page:   PgUp   PgDn  | Field:   ^Y    | Abort:       Esc   |
  Pan:        ^^   | Help:     F1         | Column: ^U     | Jump:      ^Home   |
Group/subtotal on:


Summary report only? (Y/N): N        Eject after each group/subtotal? (Y/N): N

Group/subtotal heading:


Subgroup/sub-subtotal on:


Subgroup/subsubtotal heading:
```

**Report generation screen, showing prompts and editing keys.**

## DOCUMENTATION

The documentation is generally very good, well laid out and comprehensive. The manual's tutorial section provides sufficient information for the newcomer, and the reference guide — a listing of keywords, commands, functions, and so on — will well suit the more experienced user.

The tutorial also lists all databases, memvars and command files used within the tutorial, making it a handy reference on how to make up a dBase III system for the newcomer.

There is also a quick reference chart and a manual for using dConvert.

Unfortunately, the documentation for the dFormat utility is contained within the program. This was a poor design decision since it is annoying to have to break the thread of what you are doing to refer to an online manual, especially one as complex as dFormat. I ended up dumping the documentation to a printer. That shouldn't have been necessary.

The tutorial section appeared to contain a couple of errors. Page 1-48 refers to remaining in the "Create" options rather than the "Use" option which would seem correct, and page 1-144 refers to the file Main.Prg which wasn't on any of the disks.

## CONCLUSION

During my testing of dBase III I have vacillated between enthusiasm and considerable annoyance with it.

It is certainly a well-designed package with a number of very powerful functions and facilities.

But it has a number of definite drawbacks — speed of operation is not all that good, especially when compared with dBase II on 8-bit machines; a maximum of 15 open files is poor; to use the package to best advantage you need a hard disk and should probably have more than the minimum 256K-bytes of memory.

If I needed to buy a microcomputer and software to run a database application I would seriously consider using dBase II on an 8-bit machine, rather than dBase III on an IBM (or compatible) — primarily because of cost effectiveness.

If, on the other hand, I decided that I did want a 16-bit IBM machine or already had one, I would certainly look at using dBase III.

It is very powerful, flexible and (like dBase II) limited in its scope more by the ability of the person using it than by an intrinsic limitation.

Any dBase II user who has switched to an IBM compatible machine should seriously consider using dBase III rather than continuing with dBase II. The added facilities, ease of use and overall design efficiency make it a very attractive package.

There is no doubt that, as people use it, various shortcomings and bugs will be discovered. However, that will be the case with any new software package, and the desirable features in this package far outweigh the bad.

But I probably will not use dBase

III in any serious application — simply because I will not use a system which is PROLOKed.

On the other hand, if I can convince my employers to purchase a copy of the package I will do so.

As a dedicated dBase II user, working on IBM compatible machines among others, I would definitely like to be using dBase III — I just wouldn't be inclined to use it in any critical application.

That, of course, is a matter of taste. If you are willing to accept PROLOK, I would recommend looking at dBase III.

Note: Those who intend to continue using dBase II will be heartened to know that Ashton-Tate intends to continue supporting that package. Support will primarily consist of "bug-hunting" and minor enhancements. But a multi-user version has also been released.

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**SOFTWARE REPORT CARD**

**dBase III**

| | Poor | Fair | Good | Excellent |
|---|---|---|---|---|
| **Performance** | ☐ | ☐ | ● | ☐ |
| **Documentation** | ☐ | ☐ | ☐ | ● |
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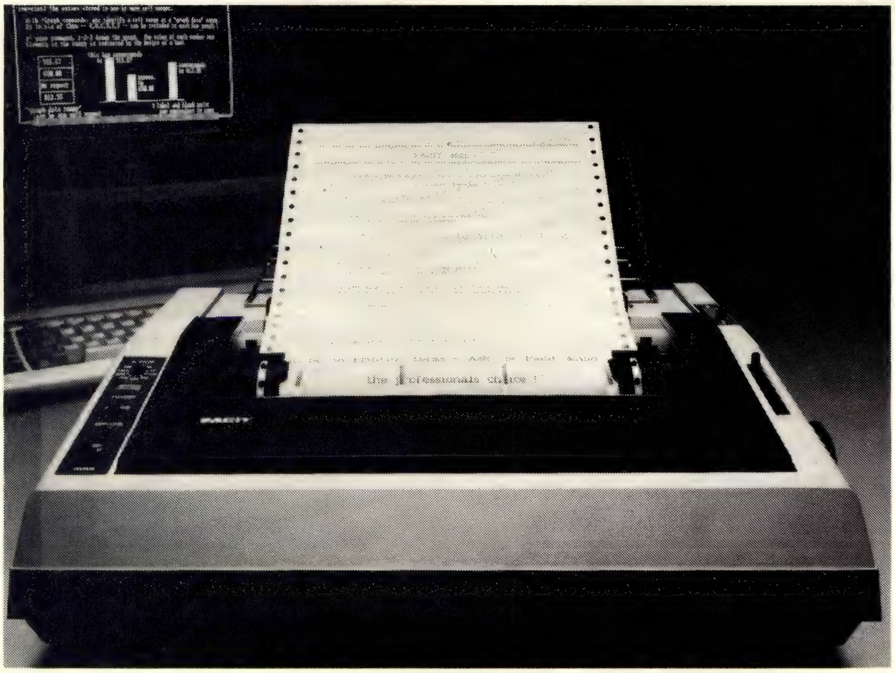

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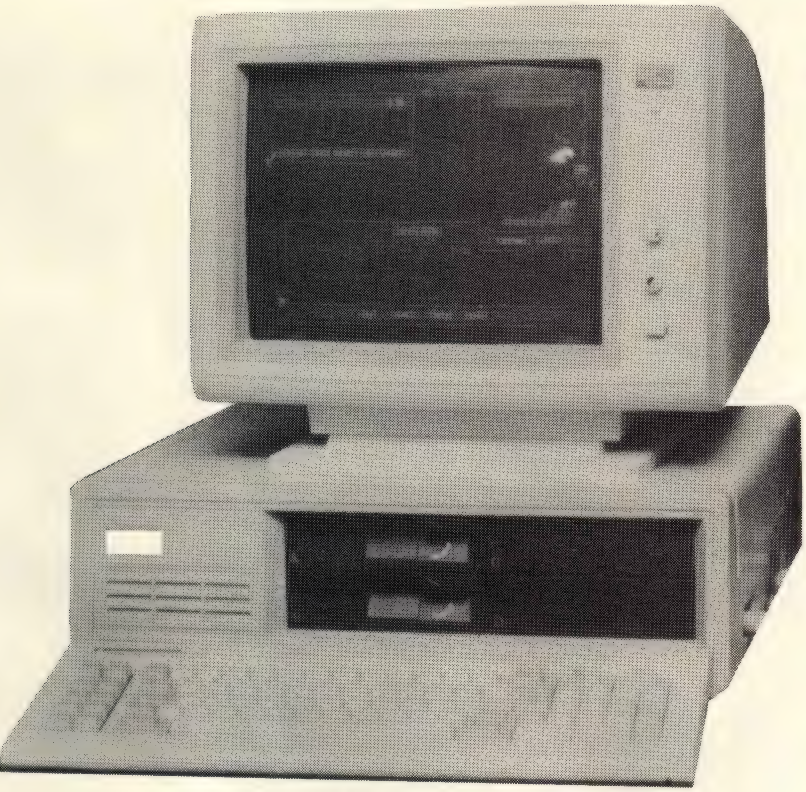

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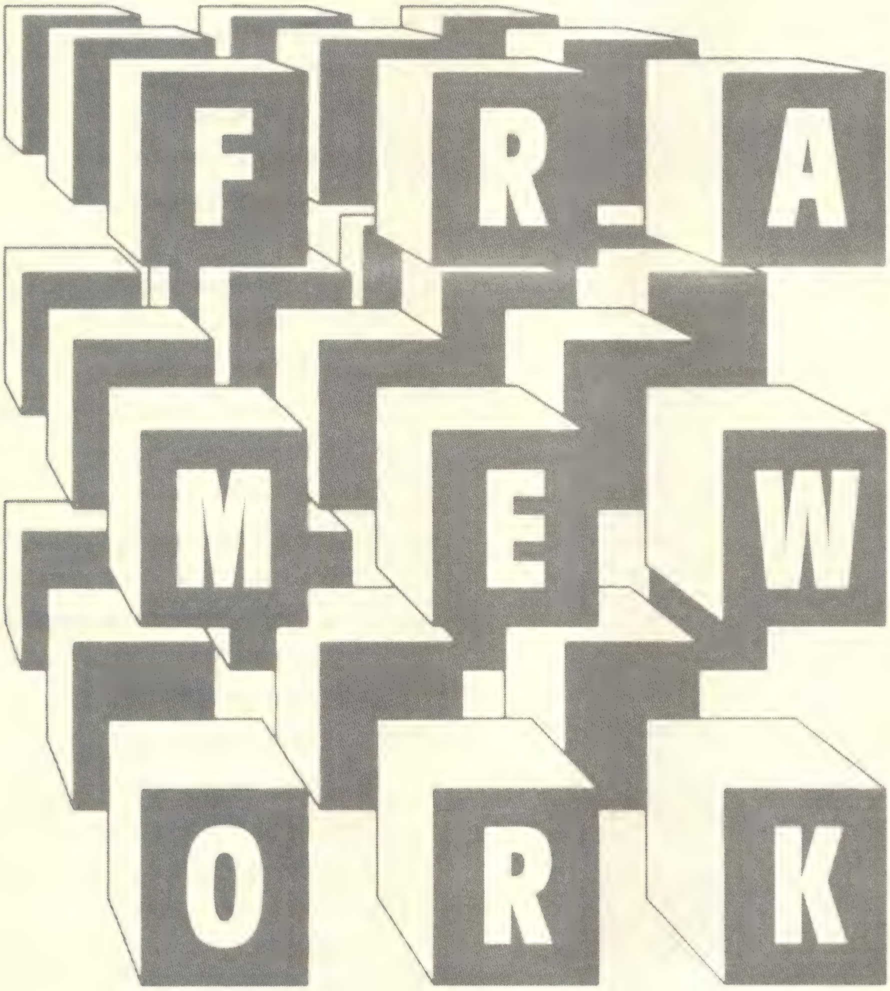
**Integrating a group of processes into a software package can easily result in a poor compromise, but Bill Crider discovers that Ashton-Tate has put together a package which is greater than the sum of its parts.**



# Quality Where it is Needed

IN MY toolbox I have an all-in-one tool that looks as if it was created by Pablo Picasso. It has two handles like a pair of pliers, but each handle has a screwdriver on the end — a Phillips on one and a slotted one on the other. It has jaws like pliers, but on one outside edge there's a hammer and on the other, a nail puller.

The all-in-one tool is intended to accomplish the most essential tasks with the least number of tools. However, the tools are not always appropriate for the job, and sometimes they get in each other's way. Sure, you can turn a screw, tighten a bolt, or drive a nail, but a regular screwdriver, wrench, or hammer might do the job better.

Integrated software tends to be a lot like an all-in-one tool: the parts don't always work together — and often they can't stand alone. In an attempt to closely integrate applications, the different modules get in each other's way.

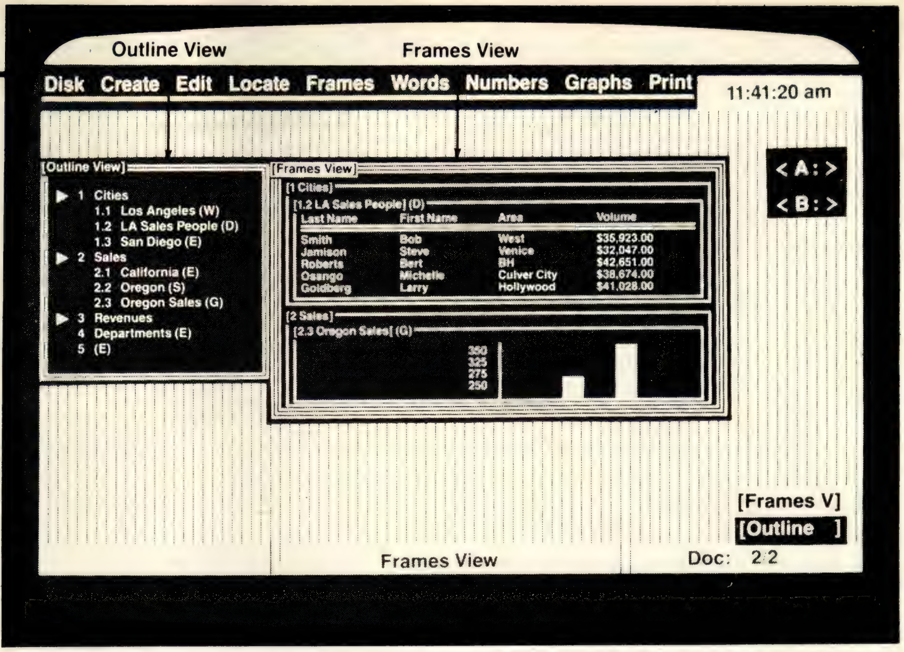
## INTEGRATED: HOW WELL?

It seems fair to ask two questions when you look at integrated software: how well do the parts stand alone; and how well do the parts hang together? A third question should also be asked: does it provide tools appropriate to the job? If the software has more commands and procedures than you need to get the job done, why not use something simpler?

In Framework, Ashton-Tate has applied appropriate solutions instead of complex ones. Each of the functions provides the tools to get the job done without making the program too complex to learn or too large to load.

Framework illustrates the principle of synergy — the whole is greater than the sum of its parts. For example, the word processor is not as powerful as Microsoft Word, and the DBMS is not as powerful as dBase II. But used together, the word processor and the DBMS are more powerful and versatile than Microsoft Word and dBase II combined.

The first integrated software packages were essentially spreadsheets



▶ 1 Cities
1.1 Los Angeles (W)
1.2 LA Sales People (D)
1.3 San Diego (E)
▶ 2 Sales
2.1 California (E)
2.2 Oregon (S)
2.3 Oregon Sales (G)
▶ 3 Revenues
4 Departments (E)
5 (E)

[1 Cities]

[1.2 LA Sales People] (D)

| Last Name | First Name | Area | Volume |
|---|---|---|---|
| Smith | Bob | West | $35,923.00 |
| Jamison | Steve | Venice | $32,047.00 |
| Roberts | Bert | BH | $42,651.00 |
| Osango | Michelle | Culver City | $38,674.00 |
| Goldberg | Larry | Hollywood | $41,028.00 |

[2 Sales]

[2.3 Oregon Sales[ (G)

**Framework screen showing an outline and some of the frames contained in the outline. The bracketed letters after each line in the outline indicate the contents of the frames as word processing (W), database (D), spreadsheet (S), graphics (G), or empty (E).**

with limited graphics capabilities; DBMS features were added later. Now, many integrated packages blend in word processing and macro capabilities. Framework has all these features, plus telecommunications, an outline processor, and a programming language.

With all these features, you might surmise that Framework, like almost every other integrated package, needs megabytes of memory and a hard disk. Not so. It runs on 256K-bytes of RAM (384K-bytes using telecommunications) and two double-sided floppies. If you wish, you can improve its performance with a hard disk, more memory, a mouse, and an 8087 chip, but these enhancements are not necessary to get your money's worth out of the program. Framework runs efficiently and quickly on a standard IBM PC or workalike system.

## FRAMES AND OUTLINES

The basic unit in Framework is called a Frame. Frames are similar to windows, but there are important distinctions. Like windows, frames provide a way of looking at several files on the screen at one time. Also like windows, frames can overlap and can be changed to any size or rectangular shape. Unlike windows, frames can be saved as files or parts of files. Frames are organisational building blocks that can be interconnected in a variety of ways. You can have frames holding spreadsheet, database graphics, outline, and word processing data all within the same file (see Figure 1).

Subframes can be nested within other subframes, and you can save any level of the nesting as a separate file. You can "compact" a document so that you see just the subframe labels or "expand" it to see the contents of one or more subframes. You can write macros and programs that affect the whole file or just specific subframes in it and make the contents of one frame dependent on the contents of another or on a calculation performed on another. The size of a frame is limited only by the computer's memory.

What can you do with information? You can discuss it (word processing), do calculations on it (spreadsheet), store and retrieve it (DBMS), illustrate it (graphics), and communicate it (telecommunications). But all of these capabilities are useless unless you can organise it (outlining). The key to the organisation of Framework is the Outline View, which is similar to Living Videotext's outline processor, ThinkTank.

When you create an outline frame, it has three empty subframes, each with three subframes under it. You can nest subframes as deep as your computer's memory permits.

## THE FRED LANGUAGE

Framework has a built-in programming language called FRED (FRame EDitor) that can be used in any frame of Framework. FRED provides more than 140 commands and functions and enables you to create your own. With FRED you can create user menus and special programs. One of the sample FRED programs included with Framework is a music editor that plays the Star-Spangled Banner and enables you to create and edit songs.

With FRED you can write your own enhancements to make each application as powerful as you wish. You need never learn a single FRED command to use Framework effectively, but for advanced users the programming language makes Framework a dynamo.

## MACROS AND DOS ACCESS

In addition to writing programs, you can create macros in Framework. A macro is a series of keystrokes compressed into one or two. Pressing ⟨Alt⟩ and typing the key assigned to the macro executes the stored command sequences just as if they had been typed at the keyboard. Macros can also be nested and can call other macros. Macros are useful for frequently used boilerplate text and for issuing complex sequences of commands. A macro library can contain only 46 macros, but you can create as many libraries as you want. A sample library of useful macros comes with Framework.

Another useful feature is the ability to open a frame that contains DOS. You can enter the frame and perform DOS functions (such as formatting disks) without exiting Framework. When you return to Framework, a complete record of your DOS transactions will be kept in the frame. You can even run other programs from DOS and bring the generated data into a frame.

## WORD PROCESSING

The word processor is simple yet appropriate. It contains all the features you would expect from a standalone word processing program, including search and replace, text formatting (right justified, left justified, and centred), font formatting (underline, bold, and italic), and block moves. For the most part, editing commands are obvious and conventional. Two advanced features Framework does not support are multiple fonts and proportional spacing.

The word processor (along with the rest of Framework) supports a wide variety of printers and plotters. You can set it up to support two printers and a plotter and you can even send print jobs to all three at the same time. The ability to print high-resolution graphics in the middle of a page of text is a synergistic coup that elevates the word processor far above the limits of its features.

## SPREADSHEET

Advanced Lotus 1-2-3 users may find Framework's spreadsheet less powerful than they would like. For many users, however, it will be more than adequate. It has standard features like variable-width cells, aligned or centred titles, column and row recalculation, automatic or manual recalculation, protected cells, ascending and descending sorts, cursor pointing to define ranges, and locking titles. The Framework spreadsheet also sports the unique ability to italicise, boldface, or underline titles. It has a host of functions, including numeric, string, logical, international currency, and statistical calculations. If these aren't enough, you can write your own functions in FRED. The Undo key, which is available throughout Framework, can even undo a sort.

The spreadsheet lacks the ability to split screens and name ranges. Framework almost makes up for the lack of split screens by encouraging the use of smaller, linked spreadsheets, and you can use cells in other spreadsheets as though they were named ranges.

You can link as many spreadsheets as you need, as long as they fit in the available memory. If they don't all fit, you can store some to disk and call them up only when you need to recalculate the one you are using. If they are all within the same outline, they can be printed out continuously, as though they were one spreadsheet.

For some reason you cannot point to a range by moving backward; you have to start at the top or left of a range and move downward. The ability to print a range is also omitted; the print function will only print the whole spreadsheet. To print a partial spreadsheet, you must save it (without closing it), then delete the portions you don't want to print. You then have to recall the saved version from disk if you want to use it further.

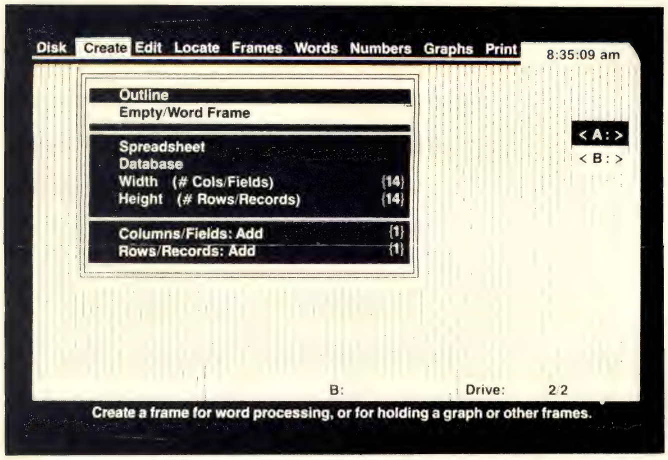
The spreadsheet is not a speed demon like Lotus 1-2-3, but it's faster than many spreadsheets. If you have an 8087 maths coprocessor chip, you can speed up calculations considerably.

Ashton-Tate knows its competition. In a special supplement to the documentation, entitled Quick Guide to Framework for Advanced Users of Spreadsheets, the only other spreadsheet discussed is Lotus 1-2-3. The supplement includes a comparison of the function key layouts of the two programs and a Lotus 1-2-3-to-Framework command translation table.

The biggest hurdle potential converts will face is Framework's lack of emphasis on huge spreadsheets. Framework can handle large spreadsheets, but the documentation discourages it. On a 640K-byte IBM PC I set up a 64- by- 64-cell spreadsheet (more than 4000 cells) and still had 148K-bytes available. On a 320K-byte machine a 45- by- 40-cell spreadsheet left room for only a few formulas — 30 by 30 cells was the largest size I found practical. Theoretically, Framework can use a 32,000- by-32,000-cell spreadsheet but I wouldn't want to try that on anything less than a Cray I supercomputer.

## BUSINESS GRAPHICS

Framework enables you to chart almost any data from a spreadsheet or database and to place the chart within any frame. Five kinds of graphs are available: bar, pie, line, marked points, and X-Y. To build a graph, you simply specify a range of cells or fields by pointing with the cursor, call down the graphs menu, choose the type of graph you want

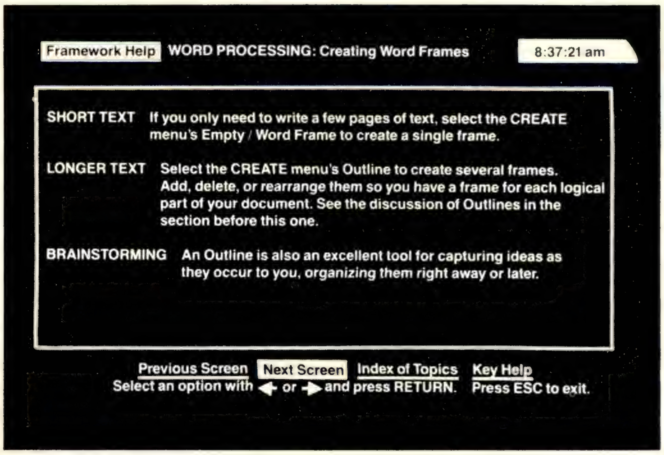


Width (# Cols/Fields) {14}
Height (# Rows/Records) {14}
Columns/Fields: Add {1}
Rows/Records: Add {1}

B: Drive: 2/2

Create a frame for word processing, or for holding a graph or other frames.

A bar with pull-down menus implements all commands.



WORD PROCESSING: Creating Word Frames

SHORT TEXT If you only need to write a few pages of text, select the CREATE menu's Empty / Word Frame to create a single frame.

LONGER TEXT Select the CREATE menu's Outline to create several frames. Add, delete, or rearrange them so you have a frame for each logical part of your document. See the discussion of Outlines in the section before this one.

BRAINSTORMING An Outline is also an excellent tool for capturing ideas as they occur to you, organizing them right away or later.

Select an option with ← or → and press RETURN. Press ESC to exit.

Extensive, context sensitive, online HELP is available.

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(or accept the default type, which is that of the last graph drawn), and press ⟨Enter⟩. You can change the size and location of the graph by pressing a function key and then moving the graph with the cursor keys. Unless you choose otherwise, the graph is automatically scaled to match the size and shape of its frame. You can also overlay several graphs from several data ranges.

Graphs can even be displayed on a monochrome monitor. Although character graphics appear on the screen, the printout will be high resolution. On a graphics monitor the graphs appear in high resolution.

## DATABASE MANAGEMENT

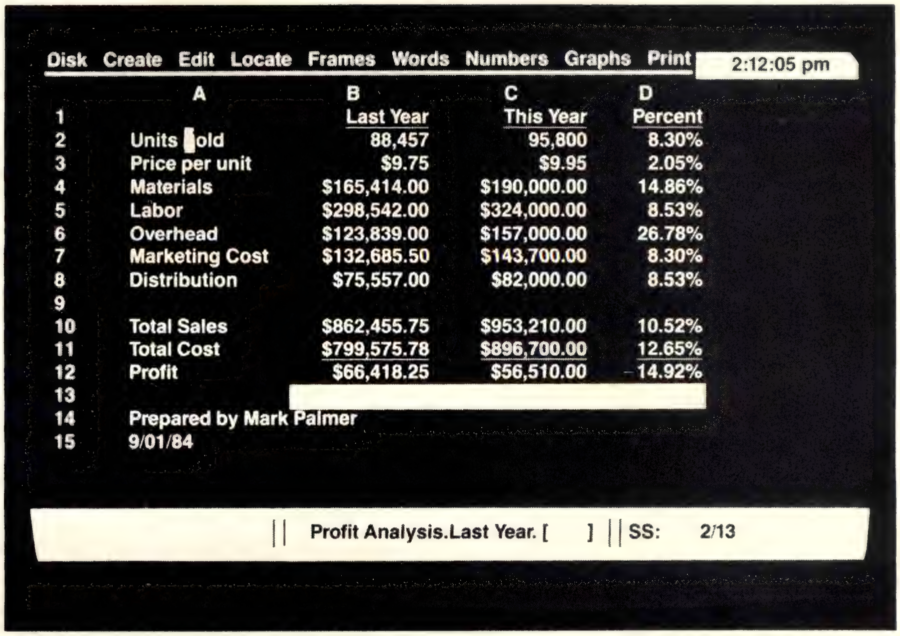
Framework's DBMS capability is not meant to replace Ashton-Tate's dBase II. For that purpose the company is simultaneously introducing dBase III. The Framework data manager is intended for quick analysis of smaller databases.

The DBMS includes calculated fields, does single-key sorts, searches for specific records, searches for and replaces specific information, and checks the validity and format of input data. You can view or manipulate data in either a Table View, which puts records in rows and fields in columns like a spreadsheet, or a Forms View, which shows only one record at a time but locates the fields in any order. The Table View is handy for looking at a database and altering it. The Forms View is intended for entering new data.

Two unique features of Framework's DBMS are hidden fields and hidden records. A hidden field has its column width set to zero and can be used to hide confidential data or just to make more room on the screen. The information can still be accessed.

Records can be hidden by using a FRED formula called a "filter." The hidden records still exist but cannot be accessed by any commands. To sort, search, or view them, you have to delete the filter with the edit formula key, ⟨F2⟩.

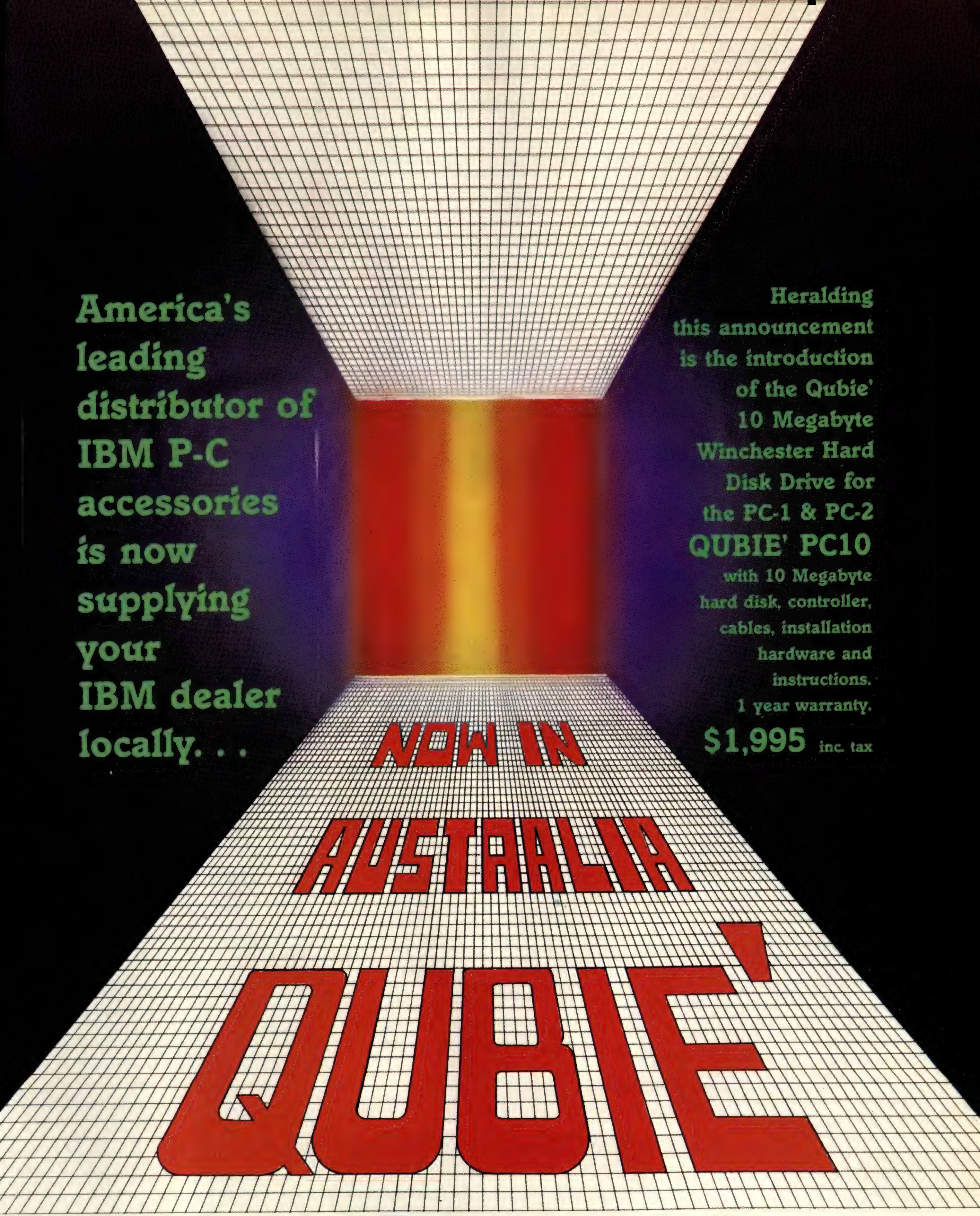
Changing the structure of a database is remarkably easy: you just open it in Table View and add new columns or delete old ones. You can even lengthen a field without going through a complex procedure, and you can easily change the structure of a form. To create a new form you just move the various fields around on the screen



|  | A | B | C | D |
|---|---|---|---|---|
| 1 |  | Last Year | This Year | Percent |
| 2 | Units █old | 88,457 | 95,800 | 8.30% |
| 3 | Price per unit | $9.75 | $9.95 | 2.05% |
| 4 | Materials | $165,414.00 | $190,000.00 | 14.86% |
| 5 | Labor | $298,542.00 | $324,000.00 | 8.53% |
| 6 | Overhead | $123,839.00 | $157,000.00 | 26.78% |
| 7 | Marketing Cost | $132,685.50 | $143,700.00 | 8.30% |
| 8 | Distribution | $75,557.00 | $82,000.00 | 8.53% |
| 9 |  |  |  |  |
| 10 | Total Sales | $862,455.75 | $953,210.00 | 10.52% |
| 11 | Total Cost | $799,575.78 | $896,700.00 | 12.65% |
| 12 | Profit | $66,418.25 | $56,510.00 | -14.92% |
| 13 |  |  |  |  |
| 14 | Prepared by Mark Palmer |  |  |  |
| 15 | 9/01/84 |  |  |  |

|| Profit Analysis.Last Year. [ ] || SS: 2/13

This spreadsheet frame is displayed as a full screen window.



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**FRAMEWORK**

| | Poor | Fair | Good | Excellent |
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| **Performance** | ☐ | ☐ | ● | ☐ |
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| **Ease of Use** | ☐ | ☐ | ● | ☐ |
| **Error Handling** | ☐ | ☐ | ● | ☐ |

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with the cursor keys. When you print a database from either the Forms View or the Table View, all the word processing format functions, such as italics or underline are available.

The most critical function missing from the DBMS is multiple-key sorts. Only one field can be sorted at a time. To imitate a multiple-key sort, you sort first by the least important field, then by the next important, and finally by the most important. The effect is the same as a multiple-key sort, but the process takes longer.

A spreadsheet and a database can be linked almost as easily as two spreadsheets. However, only a one-way flow is possible — information from the database can go into the spreadsheet, but not vice versa. To move data to a database from a spreadsheet, you must either use the Move command to move it manually or write a FRED program. You can also generate a DOS file with appropriate delimiters from either a spreadsheet or a database. Thus Framework data can be sent to other programs.

Generating reports is not as simple with Framework as it should be. To organise and print any report other than the whole database, you will have to write a short FRED program. Ashton-Tate plans to release a Framework report generator in the near future.

Framework is fully compatible with other Ashton-Tate programs such as Friday, dBase II, and the new dBase III. Framework can manipulate data more effectively than dBase but is limited by RAM. dBase can't manipulate data as well but is limited only by disk space. It is easy to move information between dBase and Framework. To load a dBase file into Framework, you just open the file. Framework automatically generates an appropriate structure for the database file. To move a Framework file into dBase, you must write it out as a DOS file and then use the Append Delimited command to send it to dBase. (If there is no dBase file with the right structure, you will have to define it).

## TELECOMMUNICATIONS

The telecommunications portion of Framework, called Mite, was obviously tacked on at the last minute. This is the weak link in the Framework chain. Mite is a standalone program; it can operate outside Framework on a 256K-byte PC. If you use it as an integrated part of Framework, you must have 384K-bytes of RAM. Mite does not use pull-down menus, and it uses the function keys in a different way from the rest of Framework. To use Mite inside Framework, you must instal it with the telecommunications option. Then Mite stays resident until you delete it.

Mite's most advanced feature is its ability to both send and receive files unattended. The program supports 300 or 1200 bits/sec transfer in binary or ASCII format, and it uses the XModem error-checking protocol. Mite can be integrated into FRED programs to capture remote data directly into word processing, speadsheet, or database frames. In this respect it is more powerful than most telecommunications programs. But it wouldn't be my first choice as a standalone program. Mite's menus are not very helpful, and it requires a separate data file for the numbers and parameters of each remote system you call.

## DOCUMENTATION

Framework's documentation is a definite step up for Ashton-Tate. It consists of two IBM-size binders; one a tutorial, the other a reference. Unlike the dBase II documentation, the manuals are typeset, logically arranged, and full of examples and illustrations. However, they do not go into as much detail on FRED as I would like; instead, they refer to the Programmer's Reference Manual, which is sold separately. The documentation is adequate for most applications, but I wish they had included a programmer's reference.

In addition to the printed documentation, there are numerous context-sensitive help screens throughout the program, and an online tutorial is packaged with Framework. The tutorial is only marginally interactive and is almost an insult to the user's intelligence. However, considering Framework's complexity, the program is remarkably easy to learn even without the tutorial.

## ANNOYING HABITS

Framework has some annoying habits. The distribution disk is

PROLOKed. You can make all the copies you want, but they will not run. If you try to boot the program without the distribution disk in drive A: the computer says "Unauthorised Duplicate" and kicks you back to DOS. Since I almost always boot from a hard disk, I often forget to put the distribution disk back into drive A:, or I leave the drive door open. Every time I read that message, I feel like I have been slapped in the face. Why not say "Please place the distribution disk in Drive A:"?

For the most part, Framework commands are obvious and logical. But there are exceptions. For example, I expect ‹Ins› key to toggle between the insert and overtype modes, but in Framework the ‹Ins› key calls the last pull-down menu you used. The toggle between the insert and overtype modes is on the Edit Menu.

Another unusual approach is the method of moving blocks of text or data. You can only move a block to the position after the cursor. Standard practice is to insert before the cursor. Because Framework inserts blocks after the cursor, you can never move a block to the first position in a frame. You have to move it to the second position, then move whatever is ahead of it to the position behind it. This is a roundabout and awkward method.

One other weakness is the method of print queueing. Framework writes a print file to disk before printing it; then it spools from the disk file and eventually erases the file. If there is not enough space on the disk, Framework will print from memory. In that case there is no spooling, and you must wait for the file to print before you continue to work. A better approach would be to let you specify another drive if the default is full or, if you have plenty of memory, allow you to queue in memory. This is one of the weakest print spoolers I have seen; only marginally better than no spooler.

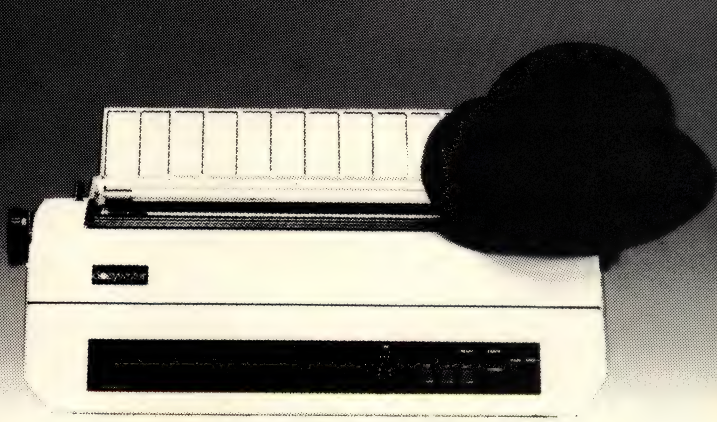
## QUALITY TOOL

I don't use my all-in-one pliers/hammer/screwdriver much. That concept needs to be refined. On the other hand, I think I will be using Framework often because, overall, it is a quality all-in-one tool.

The concept of an outline processor as the main link between all the features is excellent, and it is one of the main ways Framework differs from other integrated programs. Framework is not perfect, but so far it seems to be the best of its kind. If you can afford only one piece of software, this is the one to buy.

---

*• Bill Crider is a microcomputer training consultant and freelance writer. He lives in Arizona.*



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**Dick Anderson assembles a sales report with Framework, using dBase files and finds that it is a powerful tool for organising data.**

# FRAMING Your Thoughts

PUTTING together a sales report is a common and, in many cases, nettlesome job. The report is typed with a word processor, financial data is collected in a database and funnelled into a spreadsheet for analysis, and various graphs are generated. If you use separate programs such as WordStar, dBase II, and Lotus 1-2-3 for each task, assembling the report takes on the character of a juggling act as you pop program and data disks in and out of disk drives. Framework, an integrated software package from Ashton-Tate, not only ends this disk swapping but helps you tackle the thornier issue of how to assemble a sales report or any other project.

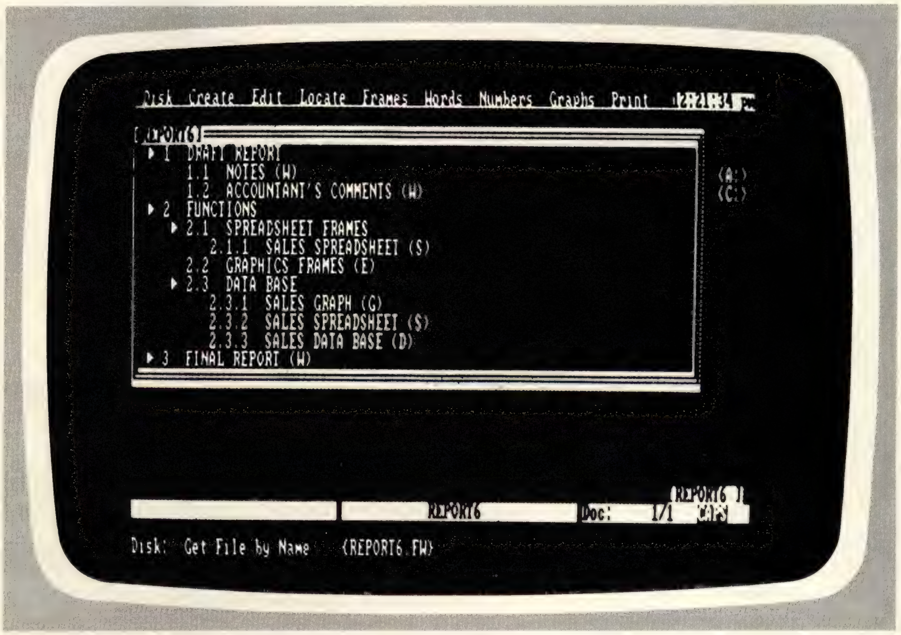
## STARTING WITH FRAMEWORK

To assemble a sales report, where do I begin? After loading Framework into my IBM PC, I build an outline by choosing the Outline option from the Create menu. An outline is essentially a map of the frames that are created by the program; each line in the outline is tied to a frame. The program first displays a barebones outline with several main and subordinate levels. When I add frame descriptions, the outline appears onscreen as shown in Figure 1.

A frame is a container for data that allows the program to isolate collections of data from each other. A given frame contains one of several types of data. A containing frame is a master container that holds only other frames, a W (word) frame holds text that is edited with the Framework word processor, an S frame contains a spreadsheet, a G frame holds a graph, and a D frame contains a database. Frame types are specified by the user when he or she makes an outline entry.

Adding a line at an existing level in the outline is a matter of moving the cursor to the last line at that level, displaying the Create menu, and choosing the Create Empty Word Frame command. To create a subordinate level, such as 2.1.1 (which would be subordinate to 2.1), I move the cursor to the desired location; pressing ⟨Ctrl⟩ and the ⟨+⟩ on the numeric keypad confirms the choice. As the command Create Empty Word Frame suggests, adding a line to an outline also creates a new frame.

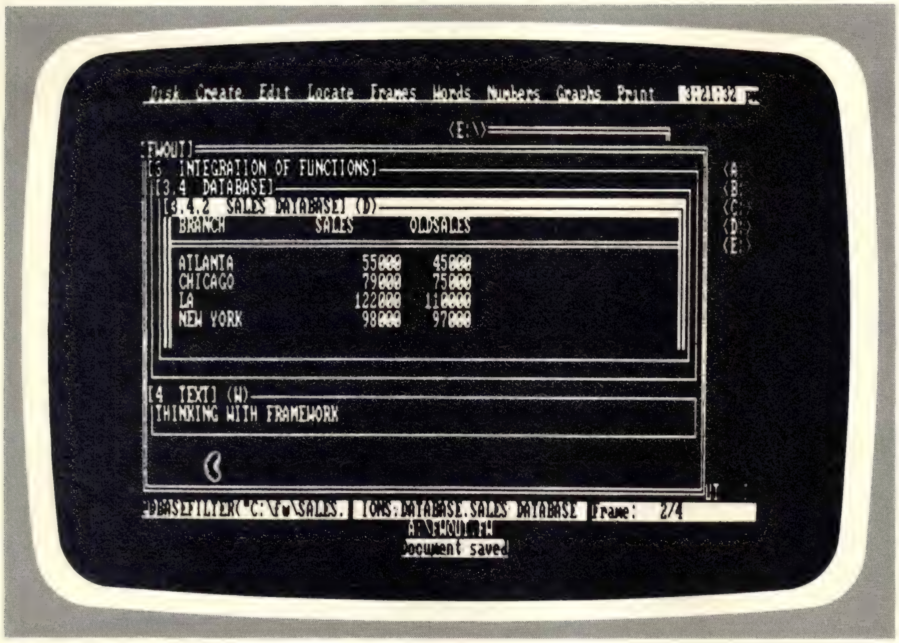
To write the sales report, I create a



```
▶ 1  DRAFT REPORT
     1.1  NOTES (W)
     1.2  ACCOUNTANT'S COMMENTS (W)
▶ 2  FUNCTIONS
   ▶ 2.1  SPREADSHEET FRAMES
        2.1.1  SALES SPREADSHEET (S)
     2.2  GRAPHICS FRAMES (E)
   ▶ 2.3  DATA BASE
        2.3.1  SALES GRAPH (G)
        2.3.2  SALES SPREADSHEET (S)
        2.3.3  SALES DATA BASE (D)
▶ 3  FINAL REPORT (W)

Disk:  Get File by Name   {REPORT6.FW}
```

**Figure 1: Framework Outline with frame descriptions.**



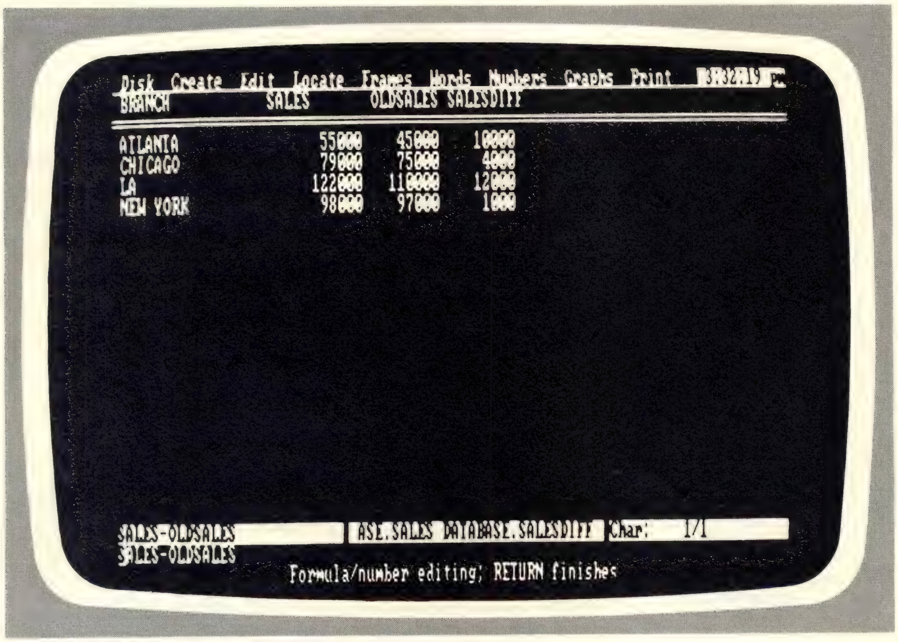
```
Disk  Create  Edit  Locate  Frames  Words  Numbers  Graphs  Print   3:21:32
                                    <E:\>
[FWOUT]
[3  INTEGRATION OF FUNCTIONS]
[3.4  DATABASE]
[3.4.2  SALES DATABASE] (D)
 BRANCH              SALES        OLDSALES

 ATLANTA             55000        45000
 CHICAGO             79000        75000
 LA                 122000       110000
 NEW YORK            98000        97000

[4  TEXT] (W)
THINKING WITH FRAMEWORK

DBASEFILTER("C:\fw\SALES.   IONS.DATABASE.SALES DATABASE   Frame:   2/4
                              A:\FWOUT.FW
                             Document saved
```

Figure 2: Copying dBase file into a frame.



```
Disk  Create  Edit  Locate  Frames  Words  Numbers  Graphs  Print   3:32:19
BRANCH             SALES        OLDSALES SALESDIFF

ATLANTA            55000        45000     10000
CHICAGO            79000        75000      4000
LA                122000       110000     12000
NEW YORK           98000        97000      1000

SALES-OLDSALES            ASE.SALES DATABASE.SALESDIFF   Char:    1/1
SALES-OLDSALES
                  Formula/number editing; RETURN finishes
```

Figure 3: Adding OLDSALES field.

word frame called Final Report as item 3 of the outline. Any time I need to consult the outline I switch to Outline mode by pressing ⟨F9⟩ key. After I review the outline, I return to my place in the document by placing the cursor at "Final Report" and pressing ⟨F9⟩ again.

Framework's frame hierarchy compels a user to organise thoughts in a structured way, in the manner of an outline. The outline structure is also helpful when you're navigating through a myriad of frames. Since each frame is listed in the outline, moving from the Final Report frame to the Sales Graph frame is a matter of moving through the outline until you come to the "Sales Graph" citation.

## USING dBASE II FILES

Framework's data management function is RAM based, and all data records must reside in memory when operations are performed on them. Luckily, Framework can read selected files and records directly from both dBase II and dBase III, which are disk-based programs. In this example, the sales figures needed for the report are stored in a dBase II file. To copy the file into Framework's database, I choose the Get File By Name option. After I supply the file name, SALES.DBF, Framework creates a database frame and displays the dBase field names.

At this point, I can use the Edit Fields/Columns command in the Edit menu to remove fields or change their order. Once that is done, ⟨F5⟩ tells Framework to copy the dBase file into the current frame (see Figure 2). Of course, in many cases you might need only certain dBase records. Combining a dBase file for these records is a relatively simple process.

When Framework creates a database corresponding to SALES. DBF, it places a "*filter formula*" at the bottom border of the frame: @DBASEFILTER (file, logical condition).

The formula operates on the database, sifting out records that are not requested, according to the given logical condition. Framework's default logical condition is #TRUE, which selects all the records in a file, but it could be changed, for example, to Sales ⟨ 10000, in which case only records with sales figures topping $10,000 would be gathered. More sophisticated operations are possible with FRED, the Framework equivalent of dBase II's command language.

## SETTING UP A GRAPH

Framework can create graphs from data in either a database or a spreadsheet. In this case, I graph the imported dBase file shown in Figure 2. First, I transfer the file into a frame called Sales Database. I then highlight the range of values to be graphed using ⟨F6⟩ (Extended Select) and the cursor keys.

Graph types are displayed in a pull-down menu. At this point I make several choices, among them the graph type (Line) and the source for the graph's X-axis labels. The labels come from the far left column in the database frame. I specify Column Has X-axis Labels to copy the labels into the graph. The Draw New Graph command tells Framework to create a graph frame; ⟨F9⟩ displays the resulting graph. When you change values in the sales database frame (or in a spreadsheet, for that matter), they are immediate-reflected in the graph.

### THE FRAMEWORK SPREADBASE

Data in a Framework database can also be used by a spreadsheet. The appropriate formula to reference a database field is placed in a spreadsheet cell. The formula operates on all the values in that field for every record in the database. For example, the Sales Database file in Figure 2 has a field called SALES. The formula @AVG(SALES DATABASE .SALES) in a Framework spreadsheet cell will add all the sales figures in the field and display the average in the cell.

Interestingly, spreadsheet-like calculations can be done without leaving the Framework database. Suppose I add a third field to the database representing the previous period's sales (see Figure 3). The field, called OLDSALES, is created by choosing the Column/Fields-Add command from the Create menu. Instead of using a Framework spreadsheet to determine the difference between SALES and OLDSALES, you set up a SALESDIFF field. This can be done by typing the formula

SALES — OLDSALES

into the first SALESDIFF field and copying it down the column using the ⟨F8⟩ (Copy) key. The difference between the SALES and OLDSALES numbers is calculated and can be recalculated instantly — the sort of "what if" speculation usually done in a spreadsheet.

The tasks performed in preparing this sample sales report demonstate some of Framework's broad capabilities. Even in such a limited example, Framework's powerful assistance in organising and interrelating data in frames is clear. Framework gives me a lot to think about — and a way of putting those thoughts in order and acting on them. **m**

---

• *Dick Andersen is the director of Advanced Micro/Mainframe Solutions, an American consulting firm. His first book is 1-2-3 Tips, Tricks, and Taps, published by Que Corporation.*

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**Life with microcomputers is not always smooth. But one DP manager found himself in a particularly sticky jam when he installed a system in Western Australia, as Chess Wade tells.**

# POWER to the Peripheral

ONE major international computer company may be wondering if its recent move into microcomputers is perhaps more trouble than it is worth. If it doesn't think so, one of the company's customers certainly is.

The customer recently bought one of the micros to act as a standalone accounts and stock processing system in Western Australia. The customer, with head office and main computing facility in Melbourne, also has a minicomputer from the same supplier. The machines are compatible.

Before the micro was shipped to WA, it was tested in Melbourne. The DP manager of the customer's main computing facility, who has more than 10 years' experience using the supplier's machines, went to WA to instal the software and oversee the initial implementation.

Because WA's power system is rated at a nominal 254 volts rather than an apparently standard 240, the DP manager also fitted a regulating transformer to cut out the extra 14 volts just in case the micro was sensitive to power variations.

Everything seemed to be running fairly smoothly, and the not-too-computer-literate WA staff appeared to have everything under control, so the DP manager returned to Melbourne.

Things ran smoothly until the micro was running an invoicing program and printing out the invoices while making the necessary calculations. For no obvious reasons the printer "forgot" to print one line in an invoice, throwing out the entire sequence of printed lines.

No doubt the WA staff initially dismissed this as a bad day for the micro or printer, and continued with the invoicing. Small problems like this can often occur and the cause can be anything from a minor operator error to the possibility of the sun's rays producing alpha particles in memory chips which can cause a "soft fail" and even hang up a computer altogether.

Undaunted, the WA staff kept printing invoices ... and the printer kept missing lines. The supplier was told about the problem and an engineer was despatched.

The engineer was unable to find anything wrong with the system and was unable to help. But before he left he installed a power analyser. More on that later!

The printer continued to play up. Eventually the DP manager got sick of it all, rang the supplier's Melbourne office and politely suggested that something be done about it.

The supplier's Melbourne office rang its Perth office, and blasted them. The hardware engineer who had attended the site rang the supplier's Sydney office where its major service centre is located. The Sydney office told the hardware engineer that it was probably a software incompatibility problem between the micro and the printer, which was not manufactured by the supplier.

But hardware engineers are exactly that, **hardware** engineers. This engineer didn't have a clue what software incompatibility was, so he rang the customer's DP manager in Melbourne. A certain customer support representative in Sydney would be able to explain the problem in detail, and would he give him a ring?

The DP manager did so and was told that the problem was in the software he had written for the micro. It used horizontal tabbing techniques the printer could not handle. The printer driving routine would have to be modified to make it compatible with the printer. Switches on the printer would have to be reset so the length of form was correct as well.

The DP manager recoded the software and sent it to the WA office, along with instructions on how the switches on the printer should be set to accommodate the new driver routines.

The DP manager then got a phone call from WA which went much like this:

**WA:** Did you send us the new software?

**DP manager:** Yes, it was on the floppy disk I sent you to be copied over. Did you copy it over?

**WA:** Yes.

**DP manager:** What's the problem then?

**WA:** It's only printing every second invoice now. Should it do that?

**DP manager:** Of course it shouldn't do that! Have you reset the switches on the printer?

**WA:** Yes.

**DP manager:** Did you turn the printer off after resetting the switches?

**WA:** No, should we have done that?

**DP manager:** Yes, it won't have any effect unless the printer is "booted".

**WA:** Oh!

**DP manager:** Try that and give me a call back to let me know how it is going.

... Which was the last time the DP manager spoke to WA.

When I last spoke to him, he expressed hopes that the printer was still playing up. He found it difficult to believe the software, compatibility problem quoted was the real reason for the printer's continual errors, but believes the engineer who installed the power analyser may have been on the right track.

Now, before I go on, it must be said that regulating an entire State's domestic power supply is no simple task. More often than not, manufacturers of electrical and electronic equipment cater for this by ensuring the equipment can handle a plus or minus 10 per cent deviation from rated voltages.

But it would seem that WA's electricity regulation is worse than most. Indeed, it fluctuates much like the flight path of a deaf bat ... and one day could prove to be as disastrous.

The analyser printed out a report which showed variations of more than 50 per cent below the nominal voltage (104 volts), and more than 40 per cent above the nominal voltage (380 volts).

Although it was surprising to learn of them, these fluctuations were very short (a single cycle or a 50th of a second if WA's cycles are as long as everyone else's) and so were unlikely to cause any major problems.

But there's more. The analyser also reported a drop in supplied voltage of 16.5 per cent (down to 212 volts) *for anything up to ten cycles or 1/5 of a second.* In the words of the DP manager: "What you might call a dirty power supply!"

Every time the analyser picked up one of these lengthy drops in voltage, it would beep. And every time the analyser beeped, the printer refused to print a line!

Although the supplier's hardware engineer installed the analyser, it would seem the supplier had decided it has nothing to do with the printer's problem. As the DP manager pointed out, it's more than a coincidence that every time the power dropped *significantly*, the printer malfunctioned.

Strangely enough, the micro itself doesn't seem to be affected by the power problems, perhaps because the micro is made by a company in the US, where they seem to believe the rest of the world operates on 220 volts, not 240. Perhaps the micro tolerates more than a 10 per cent swing either way.

But the printer is Italian, and if memory serves me correctly, the old color coding method for domestic circuits included red for earth!

Anyhow, the saga continues, and the DP manager is still in a jam. And he doesn't like jams at all.

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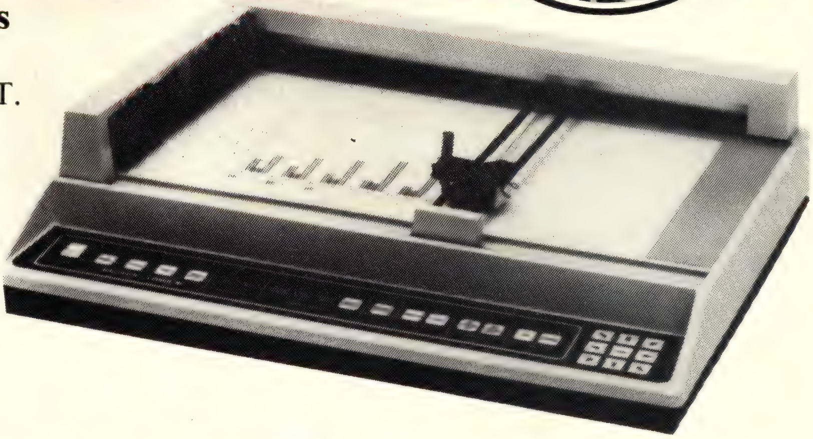

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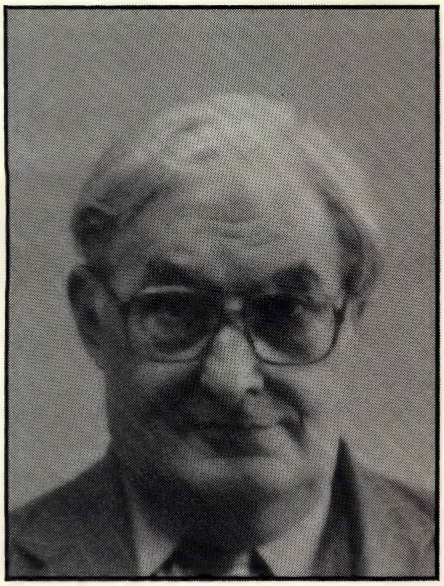


# KEMP ON COMPUTING

**In the first of a regular series on the application of microcomputers, Norman Kemp talks with a man whose job takes him to some of the nation's trouble spots.**

# Heat-seeking Micro

LOOKING for hot spots does not mean tourist excursions into offbeat nightclubs for Sydney consultant Bill Dotter, but his self-chosen career does combine elements of travel and adventure which suitably qualify his job for a high placing among unusual occupations.

He moves in three dimensions — on land, water and in the air — to fulfil assignments for clients who may have a particular interest in many fields, and need fast reports on conditions which he observes and surveys through a highly developed and specialised technological service.

With a videotape cartridge recorder, small monitor and an infrared cyclops eye aimed from the shoulder at an object to be scrutinised and measured in scientific terms, he resembles an electronic roving reporter. In fact, he is not a journalist but thermal image specialist; the reports he writes are destined for engineers, designers and architects who can interpret them in a detached technology environment, and the service is computer-aided throughout.

Dotter's parents come from Latvia, and he was sent to a school in Wollongong, NSW, which he quit at the tender age of 14 to start his first job at the Port Kembla steelworks. He stayed with the furnaces and rolling mills until he was 20, studying for further education. He then entered Wollongong University to attend chemistry and computer science classes, only to find he was not suited to the academic cloisters. In his own words, he "dropped out", and was offered a position as salesman with the Australian subsidiary of Aga, a Swedish company which specialises in scientific instruments, including a sensitive infrared device for observing and measuring heat changes in a wide range of materials and objects, and subsequently producing images in photographic or print form for critical examination.

He worked for Aga for almost nine years as a consultant in infrared data capture technology until he resigned about four months ago to start his own business. With his wife, Leslie, he formed a company LAB (Leslie and Bill) Infrared Services — and one of his most constant clients is his former employer.

Dotter's assignments may require him to travel long distances in a day — a flight from Sydney to Adelaide and back without an overnight stop is not uncommon. He has to be prepared for calls to work at short notice, at odd hours, and sometimes under precarious conditions: he has become accustomed to leaning from the perilous perch of an open helicopter to train his infrared camera on a ground object which may be a building, lake frontage area or an overland electricity grid. After he has recorded his task, he has to convert the analogue data quickly from the cassette tape into digitally produced color diagrams and graphic representations of thermal activity which the unit has measured. This is handled swiftly and efficiently on his return by special software which runs on a standard Sigma Oki Model 20 microcomputer.

As a thermal specialist, he has a wide ranging investigative role in determining trouble spots which generally arise from intense or unwanted heating but may also occur in excessively cool or cold regions. He works as closely as he can to the object to be measured, but if he requires protective shielding (as he may when on a job around steel furnaces), the infrared lens can still withstand the intense heat. Similarly, if he has to fly over an area, the aircraft can maintain a safe and steady altitude while the camera is focussed accurately on a minute spot on the ground below.

The equipment is designed for a broad range of temperatures. It can measure from minus 30 degrees Celsius to more than 2000 degrees Celsius, and is sensitive to within 0.1 per cent. He has had at least one job where he had to cope with a temperature of 1600 degrees from molten steel, and, in contrast, an assignment from a Melbourne freezing works to locate patches where ice was collecting in a roof which was in danger of collapsing under the weight. Mounted on a "cherry picker" hoist, he scanned the area for four minutes. The results which pinpointed the damage saved the company from having to spend $250,000 on a new roof.

Although he has an office contact in North Sydney, he works mainly from his Killarney Heights home, in Sydney's northern suburbs. He is proud of the fact that his is an unusual business. He knows of few other experts throughout the world engaged in the same line which he describes as "non-destructive testing".

To fit out the business, he has invested around $85,000 in equipment. From Aga, he obtained the infrared camera, an Aga Thermovision *imaging monitor* made by the company, a video cassette recorder which has been adapted for the job, and the basic Disco software package, developed in West Germany for the Japanese-made range of Oki microcomputers.

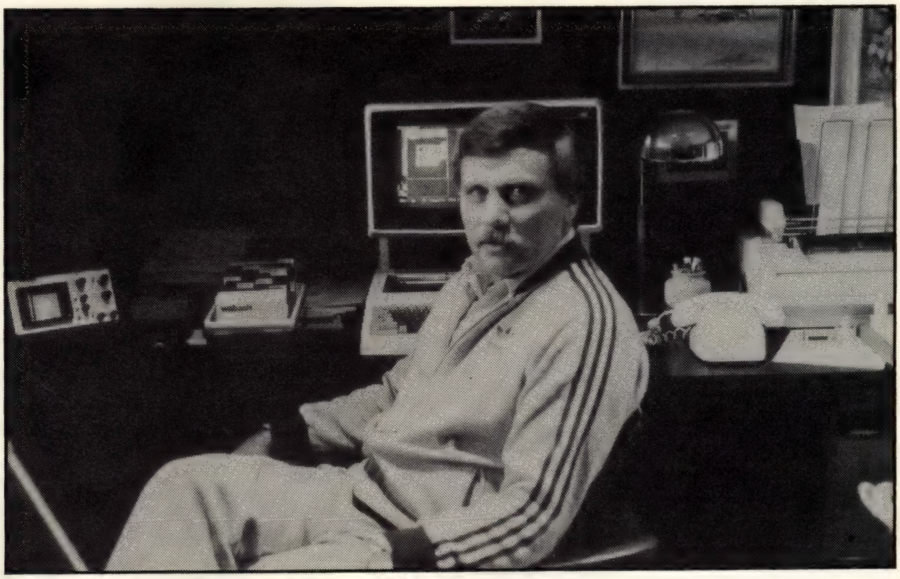
"There have been many man years involved in the development of the software for the system, and the Oki was selected as the host machine because it is sold in a number of countries," Dotter said. "It would have been pointless to have developed the applications if it had been sold in only a few places. That made it easy for me to decide which computer to buy. I chose the Sigma Oki Model 20, which is available in Australia through Sigma Data. It has become not only a part of the research aspects of the business, but is used by my secretary for word processing and my accountant for handling financial details."

Technical aspects are maintained on a dBase II database management system, and he plans to add a 10M-byte hard disk to provide increased storage and faster access to some programs which run slowly on the floppy diskettes.

Dotter's equipment resembles a small color TV camera. The core of the unit is an infrared detector which is a semicondutor device cooled by liquid nitrogen contained in a specially-insulated receptacle named a Dewar flask. This holds 50mls, sufficient for two hours' work.

Dotter does not have the problem of carrying around the potentially dangerous liquid nitrogen when going to a job. It is used in a broad range of industrial, medical and food processing applications, and he frequently obtains a supply either from a workplace or a nearby town when he is setting up his gear. The intense cold of the liquid nitrogen enables the heat-sensitive Aga Thermovision to work in close proximity to the highest temperatures without losing its accuracy — or melting.

The tape recorder, similar to the type which usually stores pictures for TV transmission, has a plug connection for an analogue to digital converter. The computer processes the data to produce one frame at a time, either in black and white or color as required. Each picture is composed of 128 by 64 pixels, or dots, of which any can be assigned to display in color or monochrome through the computer software.


**Bill Dotter at work with his Sigma Oki microcomputer.**

The Sigma Oki Model 20 is an eight-bit CP/M machine with 64K-bytes of internal RAM and two floppy disks each with 380K-bytes of capacity. Each disk can hold 8192 picture elements, equal to 38 images, with space remaining for additional information to be keyed in. In other words, each disk can hold up to two hours' work.

The image processing requirement usually takes only 8K-bytes of memory, leaving 56K-bytes for the machine to apply to its memory map. The computer palette can handle up to 64 colors to vary highlights and depths.

"Color usually allows the client to see more clearly what is happening in and around the object being studied," Dotter said. "It also tends to produce better results when a report is being prepared with photographs from the screen."

Although the Oki has a built-in dot-matrix printer, Dotter rarely uses this in his work because of its low quality. But he has found it useful for noting temperature profiles or preparing draft reports or letters.

"The imaging techniques used by space satellites are identical to those used by my equipment," he said. "But the variety of work is very different, and I have written some new analysis systems for the software which are peculiar to the areas in which I work. The beauty of the infrared testing system is that it is totally unresponsive to any areas except those to which it is being applied, and no surface contact is needed to obtain the necessary data.

"This means it can be used where conventional temperature gauging methods are impossible. All materials above absolute zero (minus 270 degrees Celsius) emit infrared radiation, and because methods I use do not come in touch with the subject, I am in no way upsetting the thermal equilibrium. This allows for very accurate recording and measuring, especially in places where access is difficult."

Dotter said that about 40 per cent of his work was concerned with high-temperature furnaces, where cracked refractory structures were causing problems. "I walk around the furnaces and look for warning spots between panels where there could be faults which cannot be detected by other means," he said.

Another major part of his work is checking electrical power grids. A helicopter is frequently used to travel along many kilometres of power transmission lines in the search for components which could fail.

"If one point between two wires is substantially hotter than the surrounding components, it is obvious it will overheat and break down quickly," he said. "By using this detection method, power authorities can correct faults before they become serious."

He may also fly over lakes and rivers, where his detection equipment will reveal warm and cold water flows which can indicate a source of pollution and its direction. This can save industrial plants many thousands of dollars in fines over equipment which is leaking. He includes requests from manufacturers for comparison photographs which can show the effectiveness of insulating materials in a building among his miscellaneous jobs.

Yet Dotter's work is not always concerned with the inanimate world. Occasionally a human element intervenes, when infrared testing can help doctors locate signs of diseases such as incipient breast cancer. In illnesses, the body reacts as other objects with patches of hot and cold; finding these and enabling quick diagnosis can make the difference between possible cure or a protracted and possibly terminal ailment. A high metabolism caused by some potentially developing cancers, the spread of rheumatoid arthritis threatening to cripple joints, and the extent and severity of burns can be monitored and the findings passed on to medical scientists.

Hospital work is a small but growing part of Dotter's activities. Infrared testing in this area is still in its early stages but it could represent an important advance in analysing a number of illnesses through measuring skin temperatures and isolating suspect regions while there is still time for detailed examination and treatment.

With the combination of the infrared tube, the video cassette recorder and the microcomputer, a new scientific field is being explored. While thermal imaging is the pathfinder which leads to incipient trouble spots, the computer is its infallible companion and interpreter and eventual source of information for human restoration aided by technical ingenuity. m

*Norman Kemp is editor of the System User and Management newsletter.*

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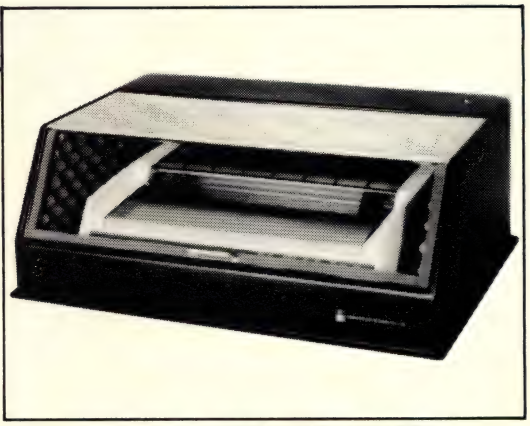

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**Dr John Kemeny and Dr Thomas Kurtz discuss the origins of Basic, their views on what has happened to the language they invented, and their plans for keeping Basic alive as the linguafranca of the computing world — through their own product, True Basic.**

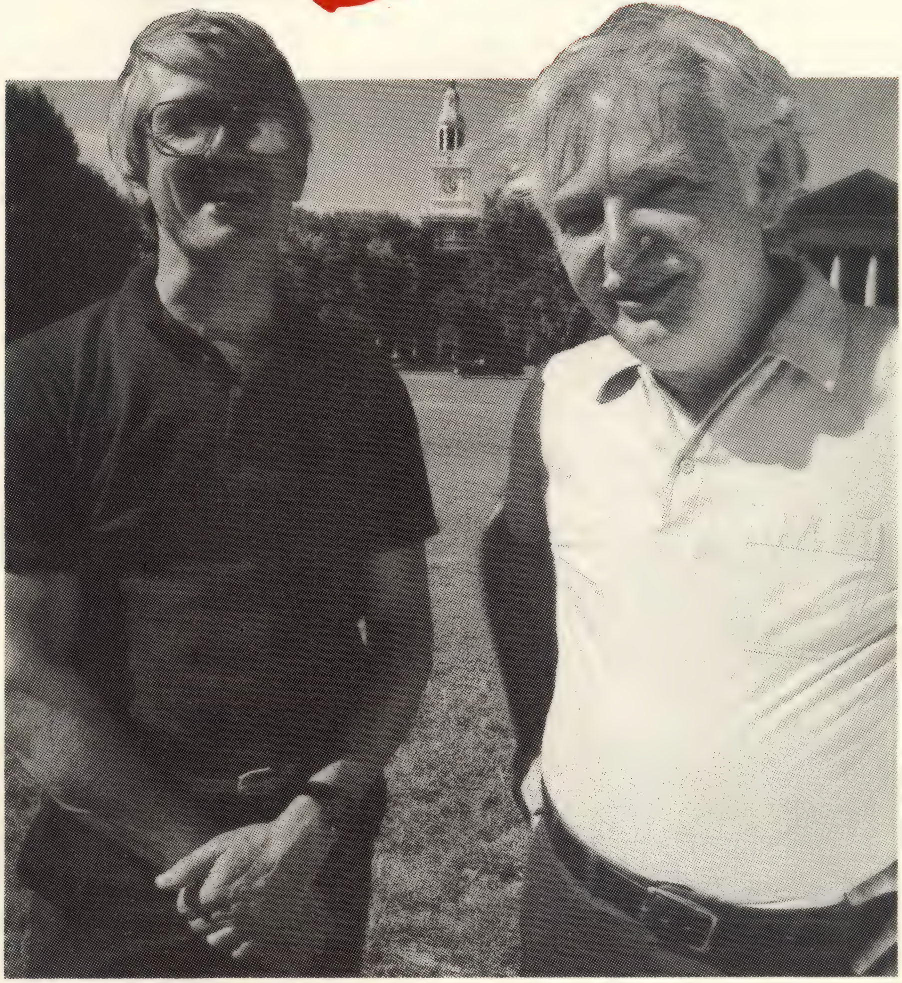
# Getting Back to BASIC

DARTMOUTH College's colonial brick buildings rest secluded among wooded New Hampshire hills as the northern-most outpost of America's Ivy League. There, in 1964, two *professors in the* mathematics department, John Kemeny and Thomas Kurtz, invented a computer language for their students. They called it the Beginners' All-purpose Symbolic Instruction Code.

Today, Basic is not only the most widely used computer language, it has become one of the major world languages. More people are conversant with Basic than speak Norwegian, Swedish, and Danish combined.

The spread of Basic was due in large part to the personal computer explosion. In 1975, two young Harvard students named Bill Gates and Paul Allen developed a version of Basic that ran on the MITS Altair, generally regarded as the first personal computer.

One would be tempted to say that the rest is history, but there is more to the story. While personal computer Basic was making converts among the general public, Basic continued to evolve at Dartmouth in



Dr Thomas Kurtz and Dr John Kemeny at Dartmouth.

its original time-sharing,mainframe-based environment. This "Dartmouth Basic" developed most of the features of a modern, structured programming language. Many of the features of Dartmouth Basic found their way into a set of standards for the Basic language that is being proposed by a committee of the American National Standards Institute (ANSI). This proposed ANS Basic is quite different from the Microsoft-produced Basic and BasicA that IBM distributes for the PC.

Kemeny and Kurtz, who are still on the Dartmouth faculty, have supervised the development of an ANS Basic for the PC, which they are calling True Basic. The product will be marketed by the publishing company Addison-Wesley, along with a book, Back to Basic, describing the history and development of the language.

*US PC World* Editor-in-Chief Andrew Fluegelman talked with Kemeny and Kurtz about their contributions to computing. The following is an edited version of that conversation.

**PCW:** What was the state of computing in 1964?

**Kemeny:** Everthing was done in batch processing. There are now some systems that have what is called "batch processing," but they are nothing like what computers were like then.

People would punch their programs on IBM cards and submit them to a computer operator. The operator would collect the cards for hundreds of programs and feed them to the computer in a "batch". When all the batch jobs were completed, it was time for the next feeding of the computer. You got only one, may two, shots a day at running a revised version of your program. John McCarthy, the artificial intelligence expert at Massachusetts Institute of Technology (MIT), who was a very good programmer, said that it used to take him two weeks to debug a program.

The limitations of batch processing were the dominant factors we were battling. Computers were very expensive and most computer centre operators figured people were cheaper. The whole philosophy was that you must not waste unnecessary computer time. And that situation made the computing environment impossible as a teaching or research environment.

**PCW:** So what was your response to that situation?

**Kurtz:** I had reached the conclusion that it was possible to design a computing environment that would be palatable for students so that they could get their answers fairly quickly. Between 1959 and 1964, we designed a user-interactive system that ran on Royal McBee's LGP-30, so we knew it was possible, and we knew it had to be done. That was one ingredient.

The second ingredient was this notion of time-sharing, which had been invented at MIT in 1959 in a research environment. In fact, it was John McCarthy who said to us: "You guys ought to do time-sharing." I remember his exact words. And I came back and told John (Kemeny) what McCarthy had said, and John said: "Yes, let's do it." It was that simple. There was no cost/benefit analysis. We just decided to do it.

**Kemeny:** It was perfectly obvious to both of us that time-sharing would be a vastly superior environment for teaching. We could give each student the ability to communicate directly with the computer — with the illusion that it was just sitting there waiting to serve.

> ***We decided to develop Basic because we needed an easy language that students could learn quickly.***

**PCW:** How *did* Basic fit in?

**Kurtz:** We decided to develop Basic because we needed an easy language that students could learn quickly and that was appropriate to the system we were creating.

**Kemeny:** At that time, there was only Fortran. Algol was somebody's dream, and John McCarthy was starting to play around with Lisp, but the other languages weren't easy, general-purpose languages.

I just knew that we could do much better than Fortran, and in a way, the fact that Basic was not the first general-purpose language gave us an advantage. Also, as a logician, I figured I could contribute to language design.

The only question Tom had was whether the language would ever get used outside Dartmouth, because IBM so completely dominated the field and Fortran was IBM's language. We were afraid that our students would learn a language that they could use nowhere outside Dartmouth.

**PCW:** Time-sharing and open access and Basic were obviously key elements in the democratisation of computing. What were the innovations of Basic that made computing more accessible?

**Kurtz:** We wanted to get rid of the elements of a computer language that would not be obvious to students. For example, the difference between integers and floating point numbers was built into Fortran. But to the ordinary person, a number is a number. So we made the decision to have a single number type.

**Kemeny:** Take the following example: A student will understand that 2 is an integer and that 3 is an integer, but a student who is nervous and who is writing his or her first program may not remember that when you divide 2 by 3 you're going to get a different kind of number. That sort of thing is a tremendous psychological barrier to programming.

**Kurtz:** Basic's input and output were

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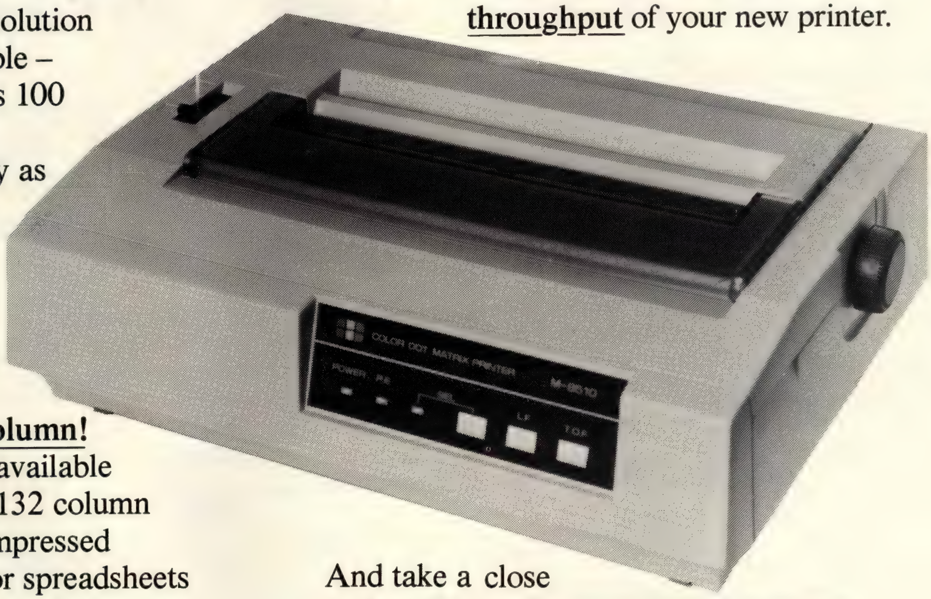

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new. Almost anything you typed for a number was legal, and you didn't have to worry about format on output.
**Kemeny:** Just having an INPUT statement was an innovation. Basic was the first language that was designed for interactive rather than batch processing. Several features of the language were developed because we knew that students would be sitting at a terminal rather than handing a computer centre operator a batch of cards.

**PCW:** What about line numbers?
**Kemeny:** They were a major innovation at the time too, although of course they have been much criticised. There were no such things as fullscreen editors then; statements had to be edited line by line. We put the line numbers in for reference, to make modifying a program much easier. We also put them in so that we could pinpoint error messages.

And we made a mistake. We decided that, while we were at it, we would also use line numbers as addresses for GOTO, IF . . . THEN, and GOSUB statements. That was not one of our brighter ideas.

**PCW:** When did the original version of Basic appear?
**Kemeny:** It was at 4 am on May 1, 1964. A number of us were sitting at Model 33 Teletype terminals typing in Basic programs. We had done that many times before, but that was the first time they worked. That was the simultaneous birth of Basic and time-sharing.

**PCW:** Did Basic continue to evolve at Dartmouth?
**Kurtz:** That's an important point. The language continued to grow to reflect things that people were developing, such as interactive graphics and structured programming.

```
100 'PC BASIC Craps Game Simulation - 10 Plays
110 '
200 FOR GAME = 1 TO 10
210 GOSUB 800
300 ON DICE-1 GOTO 400,400,600,600,600,500,600,600,600,500,400
400 PRINT "You lose"
410 GOTO 700
500 PRINT "You win"
510 GOTO 700
600 MAKEPOINT = DICE
610 GOSUB 800
650 IF DICE <> 7 AND DICE <> MAKEPOINT THEN 610
660 IF DICE = MAKEPOINT THEN PRINT "You win" ELSE PRINT "You lose"
700 NEXT GAME
710 END
720 '
800 'Roll Dice
810 DIE1 = INT(6*RND + 1)
820 DIE2 = INT(6*RND + 1)
830 DICE = DIE1 + DIE2
840 PRINT DICE
850 RETURN
```

```
!True BASIC Craps Game Simulation - 10 Plays

FOR game = 1 TO 10
    CALL roll
    SELECT CASE dice
    CASE 2,3,12
         PRINT "You lose"
    CASE 7,11
         PRINT "You win"
    CASE ELSE
         LET makepoint = dice
         DO
             CALL roll
         LOOP UNTIL dice = 7 OR dice = makepoint
         IF dice = makepoint THEN PRINT "You win" ELSE PRINT "You lose"
    END SELECT
NEXT GAME

SUB roll
    LET die1 = INT(6*RND + 1)
    LET die2 = INT(6*RND + 1)
    LET dice = die1 + die2
    PRINT dice
END SUB

END
```

**Figure 1: These two craps-game programs illustrate IBM PC Basic versus True Basic. Note the absence of line numbers and revised structures.**

**PCW:** Many people criticise Basic for its lack of structure. When and how were structured program features added?
**Kurtz:** The structured programming boom came around the middle '70s. Some work had been done earlier than that, but it hit this campus around 1974-1975. We began experimenting with a version of Basic called SBasic, for Structured Basic. The person mainly responsible for that was Professor Stephen Garland.

**PCW:** What were the new features?
**Kemeny:** The most notable advance was having separately defined subroutines that you can call by name and that have independent variables and to which you can pass parameters. No one would argue for GOSUB 800 over CALL GETFILE.

**PCW:** Were those features generally implemented?
**Kurtz:** As soon as we had a chance to experiment with structured programming, we changed to it instantaneously. We used SBasic with great success in our teaching, and the acceptance by our students was immediate. I discovered that, with a given amount of time, effort and knowledge, a student could write a program that was twice as big and twice as complex as with the original Basic.

**PCW:** At what point did you change your thinking about line numbers and GOTOs?
**Kurtz:** Personally, I have not used a GOTO since 1975.
**Kemeny:** I was slower to give in on one point. I was an immediate fan of SBasic, but it took me quite a while to be persuaded that the GOTOs had to go. At that time, there were clear-cut cases in which avoiding GOTOS led to unnatural programs. The prime examples were when you wanted to make a middle exit from a subroutine. Eventually, we were able to add enough structures for handling those special situations so that now I don't use GOTOs any more and I simply don't let my students use any instruction that has a line number in it.

**PCW:** You also added a CASE test?
**Kemeny:** There's an interesting anecdote in connection with that. Professor Garland wrote the manual for SBasic. He wanted to demonstrate the advantages of Structured Basic, and the program he used to illustrate how not to program using the old, unstructured Basic was a craps game straight out of a book Tom and I had written. Really, it was designed to show how rotton programs looked before the CASE structure was available (see Figure 1).

**PCW:** That was in 1975 — the year that Bill Gates and Paul Allen wrote a version of Basic for the Altair. What was your reaction to that?
**Kurtz:** To be honest, I didn't have any reaction in 1975. I didn't look at Basic on any personal computer until about three years ago when I had occasion to use an Apple. The reason for that is that we've always had such a friendly and convenient time-sharing system here at Dartmouth that there was never any cause to go outside. That wasn't true at other big universities where they had big research machines but nothing for students. So we came to the personal computer revolution here later than they did at many other schools.

**PCW:** And what was your reaction when you saw Basic on the Apple microcomputer?
**Kurtz:** Well, of course, I was appalled at what I saw.

***I was horrified by the fact that microcomputer Basics insisted on changing your entire program to capital letters. It's a silly thing and a stupid thing.***

**PCW:** What was appalling?
**Kurtz:** The most obvious deficiency was the lack of structured features and the reliance on line numbers. There were also some grave problems in the way lines were scanned for key words. Many of the problems have been corrected in subsequent implementations on the PC, but the lack of structured programming still remains.
**Kemeny:** I was horrified by the fact that microcomputer Basics insisted on changing your entire program to capital letters. It's a silly thing and a stupid thing. I didn't really realise how bad it was until about a year ago when I started playing around with Microsoft Basic. There are some incredibly ugly constructs in it.

**PCW:** It's ironic that all of your improvements to the language were being put into place just about the time Basic was making its first appearance on a microcomputer, but its implementation on microcomputers did not reflect any of those new developments.
**Kurtz:** Absolutely correct. The first microcomputer version of Basic was an imitation of an imitation of an imitation of the first Dartmouth Basic of about 10 years earlier.

**PCW:** What was the reason for that?
**Kurtz:** When people wanted to do a version of Basic, they never came back to us — except in the very early days — to figure out what the "official" word was. Each Basic was patterned after somebody else's Basic. It's sort of like when a bunch of people sit in a ring and each whispers something to his or her neighbor. After a time, what was originally said is lost. Much of what was important in the original design of Basic got completely garbled.

**PCW:** Do you regret that Basic was allowed to slip out into the world in imperfect or corrupted form?
**Kurtz:** I don't personally, because I don't know that I could have done anything to improve the situation. The popularisation of Basic happened because of the completely laissez-faire situation. I wish that we had started in standardisation or that John and I could have started our own project sooner but I don't see that I could have done any better following a different course at the time. If we had tried to control the language through trademark or whatever, it would not have expanded the way it has.

Right now, the real question is whether we, together with the ANSI standard, can bring the language back. That's why we call our book Back to Basic.
**Kemeny:** I really did not become aware of the problem until after my term as president of Dartmouth, which was from the beginning of 1970 to mid-1981. And then I took a year off, so I did not get back into circulation until mid-1982.

The first time I really became aware of the problem was when the college board made its decision that the language it would use on the

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advanced college placement exam in computing would be Pascal. The irony is that the chairman of the college board committee was the same Professor Garland who had been responsible for getting all of us on campus to program in Structured Basic.

Almost all of the high-school teachers pushed for Basic, because that was the language that they all knew. Steve Garland himself pushed for Basic. But then the committee asked the question: "Which version of Basic should we choose?" They surveyed all the available versions of Basic and ended up not choosing any of them, and that's how they finally chose Pascal. But the board did say that, if and when acceptable structured versions of Basic became available for personal computers, they would consider Basic.

I was furious when I heard that decision, and that motivated me to become interested in getting somebody to write a really good version of Basic for microcomputers. It took us a year or so to decide that we ought to be part of that "somebody". The deciding factor was when three superb programmers — Chip Elliott, Dave Pearson, and Chris Walker, who were all Dartmouth graduates — asked us to participate in writing a Basic for microcomputers.

**PCW:** What is your connection with the project?

**Kemeny:** I am chairman and Tom is vice-chairman of True Basic Inc which is the developer of the language. We agreed to be in on the design of the language and to supervise its development. The big joke is that our agreement with the corporation says that we will put in one day a week during the development. Recently, we've been putting in five-and-a-half day weeks and very late nights. Of course we have loved being involved in the project.

**PCW:** Do you think there can be such a thing as a "true" Basic?

**Kemeny:** We would have been reluctant to use that name if there were not a proposed ANSI standard. For all practical purposes, the standard exists. It should be in the second public comment period this (northern) fall, and usually there are not major changes after that.

It's not that we have designed this language. We have figured out how to implement it on personal computers, and we have added some extensions of the language simply to take full advantage of certain features of personal computers; but True Basic is essentially ANS Basic. It's also not surprising that True Basic bears a strong resemblance to Structured Basic at Dartmouth. There were some major cases where the ANSI committee improved the language, and so Dartmouth changed its Basic to follow the ANSI standard. Therefore, it's certainly not Dartmouth Basic, and it's not John Kemeny's and Thomas Kurtz's Basic. Except for certain additional features, it's ANS Basic.

***I hope that it will be very hard for people to come out with a shoddy version of Basic. One of our goals is to improve the quality of computing.***

**PCW:** When you compare ANS Basic to other modern computer languages, you start to see that, with some minor exceptions, it's not very different from Pascal, and Pascal is not so different from C. Do you think that we're moving toward a universal computer language?

**Kemeny:** When you say that it's not so different from Pascal, I know exactly what you mean,and I agree with you — up to a point. There are of course some very substantial differences.

But what you might call the central cores of both languages are very similar, and I would be absolutely delighted if, for example, the control structures were standardised.

**Kemeny:** I really feel, for the first time, that the control structures are absolutely right in this version of Basic. The syntax was changed fairly dramatically by the ANSI committee. It's a highly improved version of Professor Garland's original structures. Everyone will quibble over small points, but the control structures are absolutely beautifully done.

**PCW:** Back in 1964, did you envision that Basic would still be in use today or that it would be so popular?

**Kemeny:** The furthest I could look ahead was to hope that some other educational institution would find Basic a good way of introducing students to programming. We didn't start to get optimistic until General Electric adopted Basic for use on its time-sharing system and the language started to get popular. By 1970, we thought that the language would go very far, but of course none of us anticipated the microcomputer revolution.

**PCW:** Do you think True Basic will be able to set a new standard?

**Kurtz:** This may be looking at the world through rose-colored glasses, but from the initial reception that we're getting, I feel confident that this is going to turn things around.

**Kemeny:** I feel really good about the ANSI standard. Having experienced what happened to the original Basic on microcomputers, I have this nightmare that someone will write a truly bastardised version of ANS Basic and that it will become the standard. In a way, I see True Basic as a pre-emptive strike to try to maintain the integrity of the ANSI standard.

**Kurtz:** Once our product appears, I hope that it will be very hard for people to come out with a shoddy version of Basic. One of our altruistic goals is to improve the quality of computing that is available for education at all levels. m

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• *Andrew Fluegelman is the Editor-in-Chief of US PC World and Macworld.*

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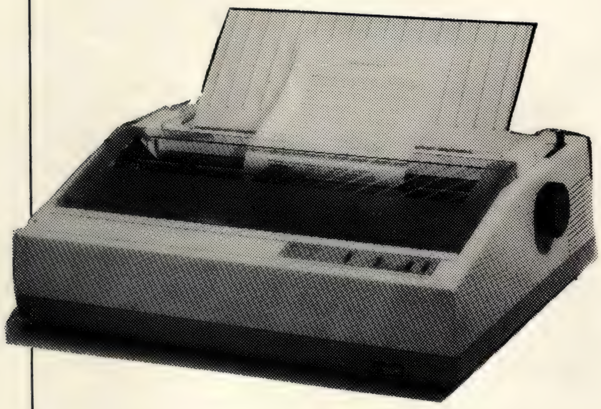

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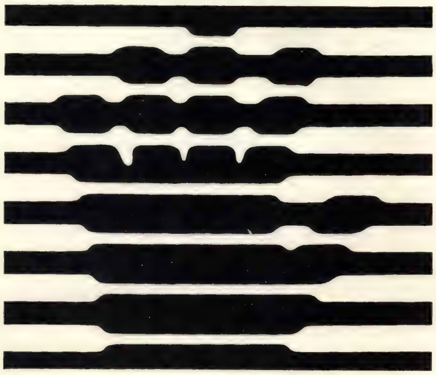
**The Department of Science and Technology has nutured a range of policy initiatives for the development of a local computer industry. Tony Smith reports on its performance.**



# The Department for an Australian Computer Industry

ALONGSIDE the many groups pushing for public visibility for their views of how the computer industry in Australia should be developed, the group most effective at pushing policy initiatives has succeeded in keeping an extremely low profile in the best public service traditions.

With the impending dismemberment of the federal Department of Science and Technology — taking its computer industry-related functions into a new Japanese MITI-style super department after the elections — it is appropriate to lift the lid on the visionary activities of the department's previously reticent Information and Microelectronics Section (ITMS).

Under the leadership of retired army officer David Ashmore, the section has grown to such proportions that serious consideration had been given to its elevation to branch status, placing it one rung closer to the seats of power.

It was in the context of the previous election that Ashmore and his ITMS achieved their most widely recognised policy initiatives, even if these were later to become their greatest source of frustration as they encountered a much more professional level of bureaucratic obstruction than they could have thought possible.

After many private sector supporters of Ashmore's ideas had lobbied effectively, a substantial commitment to a government-funded schools computerisation program was written into both major parties' platforms and subsequently delivered to the tune of $6 million a year for three years from the 1983 budget.

However the all-powerful Commonwealth Schools Commission, through which the money has had to be directed, found the idea too hard, wishing merely to preside over distribution of the pot of gold for three years, doing no more than pay lip service to the original objectives which would have seen a co-ordinated national effort to establish a framework of locally specified and built computer systems and professional development of teachers.

While only $170,000 of the $6 million has been allocated to programs of national consequence, ITMS now has to take an interest in a rash of committees and other bodies in the hope of reviving some of its original vision through a side door.

ITMS has certainly lost control of its school computerisation initative and may almost have lost influence, as responsibilities are further divided between the National Advisory Committee on Computers in Schools (which reports to the Schools Commission and of which Ashmore is still a member), the Australian Education Council's task force on education and technology (under the chairmanship of South Australian Minister for Education and Technology Lyn Arnold), Peter Karmel's Quality of Education Review Committee, the reincarnated Curriculum Development Centre and a new Software Committee under the chairmanship of the author of Status database management system, Richard Jones, who recently joined Computer Power.

However the section is still looking to support the development of hardware systems for Australian schools through Australian Industrial Research and Development Incentives Board section 39 (public interest project) grants, although a formal definition of user requirements for such hardware has been held up for six months by the aforementioned National Advisory Committee.

One significant related achieve-

**The Department of Science and Technology's Canberra offices.**

ment of another level has been the Commonwealth Tertiary Education Commission's reclassification of computer science departments from social science to experimental science for the purpose of determining staffing and funding levels.

The most visible achievements of ITMS's 10 permanent officers (plus one seconded from AWA) have been in seeding information programs, bringing widespread attention to the potential users of information technology,the most conspicuous. of which was Information Technology Week and now Information Technology Month programs which have been strongly supported by Australian Computer Society branches throughout Australia.

The Department and Society sponsor an annual technological change publication on the impact of information technology which is distributed as part of ITW. The current edition contains a substantive article attributed to ITMS giving its world view alongside the opinions of 29 authorities in the field, including Senator Button.

ITMS's long established "Smarter Data — Stronger Firm" program continues to present information on the benefits of office automation to small businesses. It will soon direct a major push through the 50 per cent of accountants still not computerised to reach not only them but also their clients.

More recent initiatives have been in the establishment of a permanent computer and microelectronics information centre and seeding the development of an Australian Unix factory within Fawnray Pty Ltd.

Under its charter for developing public awareness, ITMS sponsored the participation of Australian computer manufacturers in Royal Melbourne Institute of Technology's Australian Microcomputer Industry Clearinghouse, a novel permanent exhibition, demonstration and training centre opened earlier this year.

A similar Microcomputer Demonstration Centre is being opened in Adelaide as part of a State government sponsored Small Business tronics Centre, also in Melbourne, which aims to bring information on Centre, and the final touches are the incorporation of microelectronics in products and processes to the attention of manufacturing industry.

The section is now directing its efforts in a number of areas. These include advancing Microelectronics Application Centres from the pilot at a cost of $11 million over five years and a 50 per cent subsidy after that as the sunrise contribution to industrial output, expansion of the artificial intelligence thrust begun at University of Melbourne with a modest grant in the last Budget, and the creation of as yet unfunded software development centres to provide applied research for industry.

However, ITMS increasingly recognises that such modest projects and other programs supported by the department through government in the areas of venture finance taxation incentives and government purchasing policy are still well short of what is needed to really turn around Australia's lacklustre economic performance.

It now fully appreciates that Australia must commit itself to a national effort of the order of significance of the Japanese fifth generation project, the US man on the moon program and our own Snowy Mountains Scheme.

Despite Ashmore's long recognition of the broader justification for efforts of such a magnitude, his section has had its thinking restricted to what could be pushed through the higher echelons of the department, those higher echelons being thoroughly conditioned to modest expectations for science and technology in Australia and thus limiting their proposals accordingly.

ITMS has already identified the first step along that road as building further on our already proven excellence in the development of communications systems to implement the higher levels of the International Standards Organisation's Open System Interconnect model independently of hardware and of application software.

The clear forward vision emanating from Ashmore and his section has weathered the realities of public service and politics. The impending absorption of their functions by the new Australian MITI is seen as providing an excellent opportunity to unleash their ideas much more effectively than the educationists ever managed.

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*Further information can be obtained from the Department of Science and Technology, Box 65, Belconnen 2616. Tel: (062) 64 1155.*

# BOOKS

### Electronic Life: How To Think About Computers

*By Michael Crichton*

Published by Alfred A Knopf, Inc
Price: $US12.95

HAVING dazzled, awed, even shocked us with certain of technology's implications in his previous works, such as the novels The Andromeda Strain and Terminal Man, and the movie Westworld, Michael Crichton would now reassure us about the friendliness of microcomputers.

Yet, his stated intentions to the contrary, his coaxing manages to sound like unexamined warnings to the computer illiterates still among us, delivered in a tone of arch naivete by one of the cognoscenti (Crichton lets us know he worked on computers — mainframes, of course — at Harvard in the 1960s).

He protests too much. For one thing, in describing the genesis of the book itself — Electronic Life started out as a collection of notes for friends who were first-time users — Crichton claims the point is to have fun with the computer, to resist being intimidated by a mere machine. But he comes off sounding like the condescending pal who has already tried something you haven't and can't brook your hesitation.

He sounds impatient, cynical at times, as in this statement in a discussion of artificial intelligence: "You'd think by now everyone would have gotten the point: there is nothing a machine can't do."

Unfortunately, an empathetic, closely reasoned argument to win over the computerphobe is just what this book lacks. Instead, he or she will encounter the kind of armchair psychoanalysis of a "condition" that this insulting Crichtonian comment exemplifies: "The person who deeply resists computers is insecure. His sense of control over his life and work is shaky; he is a person drowning in a lack of self-worth."

Instead, he offers up his own attitude toward the so-called computer revolution for our emulation: embrace the technology because it is inevitable and empowering. And, in fact, we have, he claims, only ourselves to blame if we abandon it to those who would monopolise or misuse it.

Who "we" are, however, is unclear. Crichton's vision of the democratisation of the microcomptuer is socio-economically limited, his claims for the universality of access to computers unsupported.

If his hand-holding examples for new users in the appendices — programs written for the Apple *II* and the IBM PC —are any indication, "we" are people who can afford, or whose school districts can afford for our children, machines that are not exactly bottom-of-the-line.

"We" — and perhaps it's our fault again — are more often male than female in Crichton's implied audience. So, even though he acknowledges that women need to be more involved with the microcomputer than they've been over the past 10 years — an eternity, Crichton comments ironically, in the computer industry — he alludes to women in offhand, often insulting remarks.

Crichton at his best when he speaks to those with whom he is the most comfortable — professionals like himself. He is helpful to managers who don't know what to expect from a programmer; he's interesting when speculating about how the duties and responsibilities of laywers psychiatrists, and medical doctors (he holds an MD) will be transformed utterly once the data they dispense is accessible, but the human contact they afford is irreplaceable.

But if we are to accept his view that computers are empowering by nature, we have to fault him for a rather jejune understanding of the nature of a revolution, and remain appalled by the kind of specious analogy he offers to convince us to join in because "computers are going to be in everyone's hands — like handguns." **Susan Gubernat**

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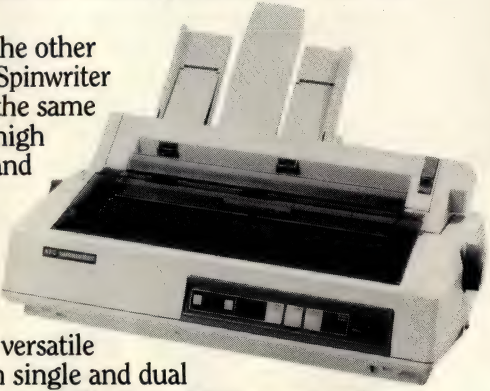

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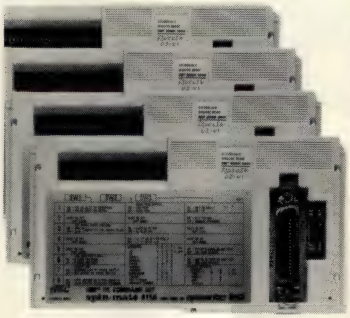

Flexibility is another breakthrough for the 8800. No matter what brand of computer you use, or what software word processing package you run, the 8800 will plug-in and go – thanks to its range of interface modules.

Modules are available for the IBM-PC, standard RS232C, RS232C-Diablo mode and Centronics parallel. No longer do you have to buy a dedicated printer.

Other breakthroughs?

Well, noise control features highly. If you've ever used a daisywheel-type printer before, you know how noisy they can be.

Not so with the 8800. It's loaded with noise reduction features that make it unobtrusive in your office.

Anything else? How about auto sensing for the print thimble! The printer knows what type and pitch thimble you have fitted without operator intervention.

The 8800 proudly takes over from the 7700 series which, for many years, has been a workhorse among heavy-duty, high-speed daisywheel-type printers.

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# EDUCATION

with
Ian Webster

## NACCS named

THE Schools Commission has released the names of 14 people appointed to the National Advisory Committee for Computers in Schools, to administer the program launched by the Federal government. The committee has begun to prepare its report for extending the program to primary schools and has established a number of working parties to develop the commission's recommendations on hardware and software equipment.

Steve Murray, formerly of the Queensland Education Department, has been appointed chief executive officer for the program.

The members of NACCS are: **Mr K Axton,** Director-General of Education, Hobart, Tas; **Dr R Andrews,** Schools Commission, Woden, ACT; **Mr D Ashmore,** Director, Information Technology and Micro-electronics, Department of Science and Technology, Belconnen, ACT; **Ms T Downes,** Computer Education Consultant, Catholic Education Office, Leichhardt, NSW; **Professor V Gledhill,** Professor, Computer Science, Faculty of Military Studies, University of NSW, Duntroon, ACT; **Dr N Hoffman,** Director of Educational Services, Education Department, East Perth, WA; **Dr Richard Jones,** Computer Power P/L, Canberra, ACT; **Mr B Manefield,** Principal, Denistone East Public School, Eastwood, NSW; **Ms Kate Nash,** Victorian Teachers Union, Camberwell, Vic; **Mr Peter Sandery,** Principal Education Officer, (Computing/Technology), Department of Education, Adelaide, SA; **Ms Leonie Trimper,** Principal, Elizabeth West Junior Primary School, Elizabeth West, SA; **Ms Anne Williams,** Dalton Special School, Newtown, Tas; **Mr D Woodrow,** St Peter's Lutheran College, Indooroopilly, Qld; **Ms S Yarrow,** Oxley, Qld.

While the industry wonders what Atari's new range of personal computers will look like, Jack Tramiel has slashed the price of the Atari 800XL in an effort to clear stocks and to provide some competition to Commodore in the weeks leading to Christmas. Tramiel hasn't said whether the 800XL will be continued as part of Atari's new range, but the flow-on of its price reductions to the NSW Education Department contract have reduced the price of the 800XL to less than $300. Great value while they last.

The Queensland Education Department contract for computers in schools, just released for tender, will be the most fiercely contested of all contracts released in Australia. The contract is the result of a Queensland government initiative to spend $7.5 million on hardware for Queensland schools.

The tender is for two levels of standalone microcomputer systems with the capacity for networking and involves substantial offset requirements.

The contract is a "must win" challenge for IBM, which has been nosing around for an entry into schools computing but needs a compulsory contract to establish a base in Australian education.

IBM has the opportunity of tendering for both levels of system with the PC and PCjr and of setting an unbeatable price, which would be a very attractive offer and, if successful, ensure a place for IBM among the chosen few in Australian computer education.

This contract is also very important to Barson Computers and Applied Technology, who need to sustain their momentum in the education market. A successful tender by either company would probably involve establishing an assembly plant in Queensland.

The third Australian computer education conference will be organised by CEGQ at Queensland University from July 3-5 next year. The conference theme is "The Information Edge: The future for educational computing". Anyone interested in contributing a paper or seminar should contact the program co-ordinator: ACEC 85, GPO Box 1669, Tel: (07) 352 8517.

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# LETTERS

From Craig Norris
Special Projects Division,
Sony (Australia) Pty Ltd.

I am disturbed by the amount of inaccuracy, generality and hearsay contained in Mr Peter Heininger's article Portable Newsgathering: A Mixed Blessing for Journalists in the September edition of Micro Computerworld.

A reader of the article would get the impression that Sony Typecorders were no good and that NEC 8201As are a god-send. While I agree that the NEC 8210A is a fine product, I feel that Mr Heininger's article presents a very unfair picture of the Sony Typecorder.

Specifically, he wrote: "A number of reporters I spoke to said they hated the machines . . ." What number? One, two, three? A number of people I have spoken to said they hate IBM mainframes! Does this mean we should write off IBM's product?

Mr Heininger also wrote: "Reports from News Ltd have it that Typecorders are sitting around in boxes not being used . . ." What reports? Reports from whom? How many Typecorders are lying around? One, two? Mr Heininger's statement is nothing more than generalised hearsay.

Another quote: "News Ltd reporters use Typecorders in Federal Parliament, and 10 units were used in Los Angeles to cover the Olympic Games." This statement gives the impression that News Ltd does not use Typecorders elsewhere. Mr Heininger does not seem to know that News Ltd reporters were sending stories to Sydney by Typecorder from Europe, Japan and the USA regularly before the other lap-top machines were even on the market.

Yet another generality: "News Ltd reporters, on the other hand, said the Typecorders were too heavy . . . and the small single-line screen meant reporters had no idea of what they had written." Which reporters? Again, maybe one or two? The Typecorder will scroll through previously-typed text, so I fail to see how a reporter could have "no idea" of what he had written.

Mr Heininger then spent two full paragraphs describing two bad experiences with Typecorders. One involved "nothing but trouble" and the other was to do with telephones which will not fit standard Sendata acoustic couplers. Two incidents out of the thousands of successful Typecorder transmissions! I find it difficult to believe that Mr Heininger could not find two similar incidents from the NEC experiences. As for the success stories Mr Heininger quotes from NEC users, I have seen many of the same kind of success stories, in writing, from Typecorder users.

Mr Heininger also inaccurately states: "The only way of knowing if the material has been received is for the reporter to put through another telephone call . . ." The Sony system installed at News Ltd acknowledges the caller that the transmission was successful and warns the caller if the story was aborted because of transmission errors. The Sony system will also continue to receive stories even if the host newspaper computer has crashed. The Sony interface in News House will store the stories and then automatically forward them to the host computer when it is "back on the air".

Finally: "some machines often don't tell a reporter how much available memory is left for use . . ." Mr Heininger fails to point out that the inbuilt microcassette drive on the Typecorder will store up to 100 pages of text on one microcassette and it can transmit each page in sequence from the microcassette, and it warns the user while typing, when each page is near its end.

The Sony Typecorder was the first lap-top word processor on the market in Australia. Sony worked closely with News Ltd to provide a workable system which met the requirements for remote text entry, using the best technology that was available at the time

News Limited and Sony took the gamble and pioneered the use of lap-top machines for journalists. Of course, there are better machines now, and next year there will be even better ones again.

In his article, Peter Heininger displays no sense of appreciation for what was achieved. He seems only concerned about what wasn't achieved. He liberally uses hearsay, generalities and sweeping statements, thereby giving a very distorted and inaccurate report.

*Peter Heininger replies: The reporters I spoke to had no vested interest in the equipment they use. What more needs to be said.*

---

From Chris Benson,
Manager, Jupiter Micro Craft
Como, WA.

When I come across an item such as Milko's Helper (Sept, p150) I wonder whether any news releases from any company are to be believed, and whether the papers printing these ever bother to verify claims made.

This particular press release has appeared in a few publications and its claims caused quite a stir over here in the West. Let me point out that:

☐ The program is NOT recommended by the union, much less officially endorsed

☐ The program released by Computer Country at the time of the press release was not a developed system, it had no users and was, and still is, far from a proven system.

My company has been in the business of writing software packages for some years, and in particular for milk vendors. There my systems are the most widely used of any in Perth (in excess of 50 installed systems, with new ones being installed at the rate of about one a week).

Yet, from the release, it would be easy for a reader to get the impression that there existed no satisfactory computer system for milkos, that the union figured strongly in the development of a new one, and was pleased with what was achieved. None of this is true. In fact most of my system's users are past and present members of the union and its executive.

Now, it may come across that I am writing a "sour grapes" type of letter and I am certainly annoyed that, after investing a lot of development time and field testing (now nearly five years) to achieve a solid, reliable product which I intend to release in other States, I have to compete against something of this nature.

IBM Compatible PC's.

# One stands head and shoulders above the rest.

Amongst the growing number of IBM* compatible personal computers, there are a lot of major differences.

All offer similar power, and are capable of performing almost identical functions. The best one, however, must not only be industry standard software and hardware compatible, but also offer a total package. That alone eliminates about 85% of the roses in the garden.

The fact that the best one will also offer a free 3-month warranty plus, for a token amount for registered users, an additional 9-month warranty, and the maintenance back-up of Sigma Data that enables on-site care is quite unique.

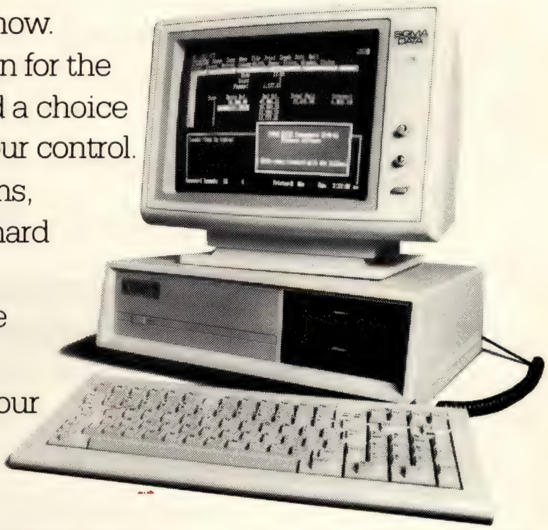
Most of the remaining roses are looking very tired now.

The best one will also offer a more functional design for the users' ease. A footprint that takes up less desk space. And a choice of screens that tilt and swivel with push-button mono/colour control.

The best one will offer a choice of operating systems, including the latest Concurrent CP/M-DOS†, an optional hard disk model, and an extensive range of business software.

If you could find two roses offering all this, then the best one would be the least expensive.

And that's the Elite from Sigma Data. To compare our rose with the rest of the garden, phone Sigma Data, Sydney on (02) 439 6211.



**Elite**

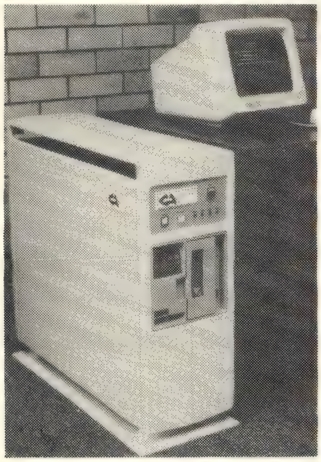
*IBM is a registered trade mark of International Business Machines Corp. † Registered trade mark of Digital Research.

Stewart Roache Watson SDC041

# SYSTEMS

## Queensland made

COMPUTERACC, of Queensland, has announced a new range of MicroAcc multi-user systems. Based on the Digital LSI-11 Q Bus range, the entry level MicroAcc system will comprise an 11/23+ Processor, 500K-bytes of RAM, six serial lines, a 30M-byte Winchester disk and a compatible tape drive. Housed in a purpose-built ComputerAcc column the entire system fits neatly beside the desk with a footprint of only 300mm x 750mm (12" x 30"). The base MicroAcc system is upgradeable with the new Digital 11/73 processor up to 4M-bytes of main memory. The SuperMacc is a larger capacity unit carrying up to 216M-bytes of formatted Winchester disk storage and 18 lines dependent on application/job mix. The company says the MicroAcc range will be further upgradeable with the release of the new 32-bit Microvax in coming months.



**Further information:** ComputerAcc, 146 Leichhardt St, Brisbane 4000, Tel: (07) 831 6977.

## The Commuter

KENELEC has released Visual Computer's 16-bit portable IBM compatible computer. Weighing less than 8kg, the Commuter includes 128K-bytes of memory expandable to 512K-bytes, MS-DOS 2.1, 83-key keyboard with all IBM functions and identical keyboard layout; 5¼in double-sized double-density 360K-byte floppy disk drive (an extra drive is optional); bit-mapped color graphic support, parallel port, RS232C serial port, RGB direct drive output for high-resolution monochrome or color monitors, composite video output, power-up diagnostics and a connector for integral IBM expansion chassis. Support for additional IBM 80 x 16 char LCD is optional, while support logic for 80 x 25 and 40 x 25 character display is standard.

**Further information:** Kenelec (Aust) Pty Ltd, 48 Henderson Rd, Clayton, Vic 3168. Tel: (03) 560 1011.

## Sanyo WP

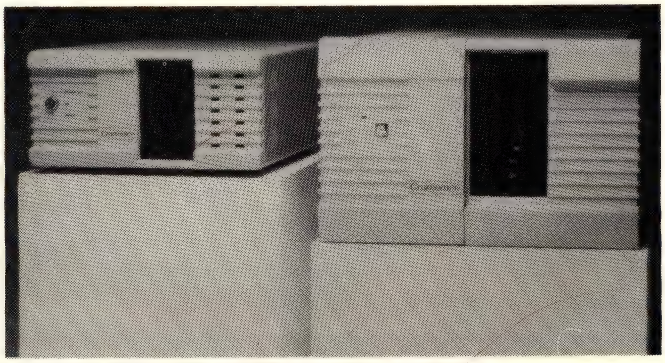
SANYO Office Machines has launched Sanywriter, an integrated word processing package priced at less than $3000. The package includes Sanyo's MBC 550 16-bit color computer with keyboard, an amber monitor, and a dual-function electronic daisy-wheel typewriter/printer complete with interface cable. Software includes Basic, WordStar and CalcStar for spreadsheet, all with full documentation, running under MS-DOS operating system.

**Further information:** Sanyo Office Machines Pty Ltd, 5-9 Harbourview Cres, Milsons Point, NSW 2061. Tel: (02) 929 4644.

## Insystems Unix

INSYSTEMS has released the new Cromemco series of Unix-based supermicrocomputers in Australia. Designated the System 100 and System 300 series, the new systems use the Unix System V operating system with Berkeley enhancements and are available in four standard configurations for each series. System models are said to accommodate up to 16 users and feature high-speed operation, large internal memory, a 68000, 10MHz central processor, cache memory for disk operations, and capacity for expansion. At the heart of the systems is a new central processor, Model XPU, a high-performance board using a 10MHz 68000 processor, coupled with a new model XMM memory management board. Also standard is a 50M-byte Winchester hard disk, controlled by Cromemco's STDC hard-disk controller. The STDC includes a dedicated microprocessor and four-track cache memory. It is said to automatically verify information written to disk with a read-after-write cycle to ensure data integrity. Floppy disk storage on the systems includes one 390K-byte, 5¼in disk drive on the System 100 and one 1.2M-byte 8in disk drive on the System 300. For each system the user can choose between 512K-bytes, 1M-byte or 2M-bytes of RAM. Cromemco is also introducing a new 2M-byte RAM board for expansion of the internal memory of these and other systems. The System 300 can accommodate up to eight of these boards for a total of 16M-bytes.

**Further information:** Insystems Pty Ltd, 337 Moray St, Sth Melbourne 3704. Tel: (03) 690 2899.



Cromemco System 100 and 300 supermicro computers.

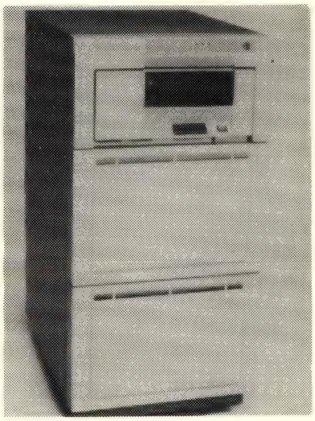
## Super Six board

MICROTRIX has released a single-board computer which is available as an individual unit or as the heart of a complete computer system. Known as the Super Six, it is said to provide everything necessary to run single-user operating systems without additional boards. Featured on one S100 card are 128K-bytes of parity-checked RAM; a Z80B CPU operating at 6MHz, two RS232 serial ports, two parallel ports, a floppy disk controller, a direct memory access controller, monitor EPROM and counter/timer circuit. The floppy disk controller is said to be able to support up to four disk drives simultaneously. These can be a mixture of 5¼in and 3½in units. Operating systems available are CP/M 2.2, CP/M 3.0, and single-user TurboDOS. Other uses for the Super Six are said to include data acquisition and process control systems. A companion hard disk controller is also available.

**Further information:** Microtrix Pty Ltd, 24 Bridge St, Eltham, Vic 3095. Tel: (03) 439 5155.

## Mentor's Pick

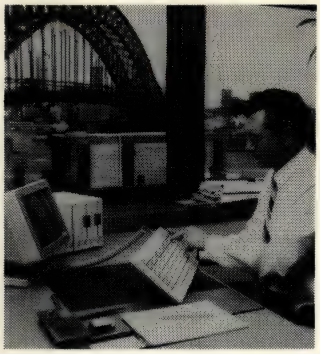
IMPLEMENTATION and Management has announced the release in Australia and Papua New Guinea of the ADDS-Mentor family of multi-user computers using the Pick operating system. The Mentor systems range in price from $20,000 to more than $100,000. The company is establishing a network of value-added dealers and is inviting enquiries from interested organisations. Mentor is manufactured by Applied Digital Data Systems Inc, a wholly owned subsidiary of NCR Corp, and is maintained and supported throughout Australia at more than 50 centres by NCR. The newest and smallest Mentor 2000 is said to support up to 32 simultaneous users and provide highly responsive enquiry, data entry, data retrieval and computational services. The Mentor 4000-EPS will support 60 simultaneous users. The heart of Mentor's hardware is a 16-bit processor using the Zilog 8000 CPU chip, with a memory range of from 128K-bytes to 1M-byte. Hard-disk capacities range from 15 to 600M-bytes and all systems are delivered with inbuilt tape drives. The Mentor 2000 includes a 40M-byte streaming tape cartridge.



**Further information:** Implementation and Management Pty Ltd, 24 Thomas St, Chatswood, NSW 2067. Tel: (02) 27 7647.

## Strong orders

BURROUGHS has announced a strong order flow for its new B25 modular small business computer and XE520 shared resource processor, both of which were released worldwide in May. The B25 and the XE520 are said to be designed to provide high performance at a low cost. The B25 is said to be compatible with Burroughs' B20 models. Burroughs says larger workstation cluster networks can be configured by using the XE520, said to be able to manage up to 32 B20 and B25 workstations. The XE520 provides file handling and input/output management. The operating software for the B25 includes Burroughs proprietary B20 operating (BTOS) as well as MS-DOS and CP/M-86. BROS is also the operating system for the XE520.



**Further information:** Burroughs Ltd, 30 Alfred St, Milsons Point, NSW 2061. Tel: (02) 922 9300.

## TI Portable

TEXAS Instruments has released a portable computer compatible with the desktop TI Professional Computer. The new model is available with either a built-in 9in color or monochrome monitor. The TI Portable Professional Computer has the same graphics resolution, color capability, memory expansion to 768K-bytes, and keyboard as the TI Professional. All software available for the TI Professional, such as MS-DOS and Lotus 1-2-3, are compatible with the Portable. Also available for both computers is TI's Speech Command system and support for the EtherSeries LAN.

**Further information:** Texas Instruments Aust Ltd, 6-10 Talavera Rd, Nth Ryde, NSW 2113. Tel: (02) 887 1122.

## Televideo portable

ANDERSON Digital Equipment has announced the release of the Televideo Portable Computer, an IBM PC compatible, said to combine features of the Tele-PC desktop computer in a portable unit. The TPC 11's features include a slimline 5¼in floppy disk drive, while the TPC 11D features two. Each drive has a formatted capacity of 360K-bytes. TPC 11D offers 720K-bytes of on-line storage capacity. Other standard features include 256K-bytes of RAM, graphics display, parallel printer ports, internal expansion slot, TeleDOS and GN Basic.

**Further information:** Anderson Digital Equipment Pty Ltd, 14 Whiteside Rd, Clayton, Vic 3168. Tel: (03) 544 3444.

## Enhanced processor

THE Universe Supercomputer range has been enhanced by the 80286 processor. The Universe Supercomputer can now directly address more than 16M-bytes of RAM, according to AED, the Australian designer and builder. AED says the 80286 conversion maintains compatibility with its existing concurrent MP/M 8-16 operating system and paves the way for more advanced operating systems such as Unix and Xenix 286. To support the 80286, AED is committed to implementing Unix, and possibly Xenix 286.

**Further information:** AED, Unit 3, Prospect Industrial Estate, 2 Stoddart Rd, Prospect, NSW 2150. Tel: (02) 636 7677.

The Texas Instruments Portable is compatible with the TI Professional.

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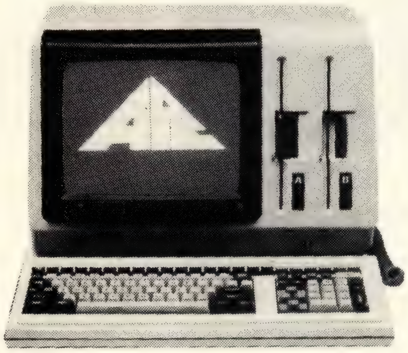

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# PERIPHERALS

The Intecolor 2427D color terminal.

## Anderson releases

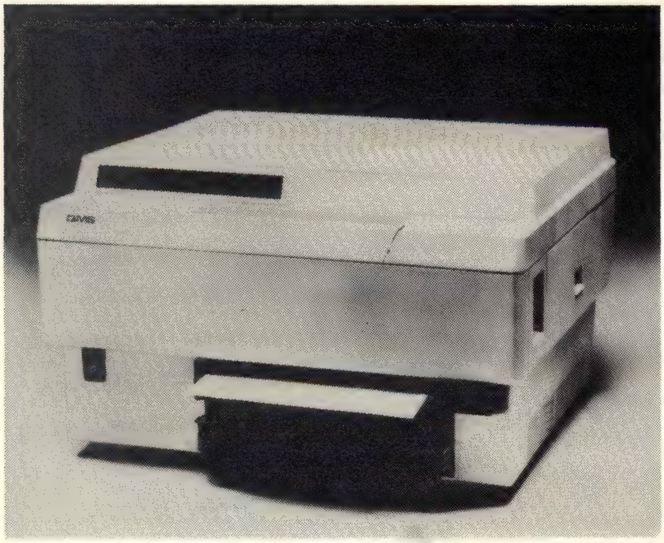
ANDERSON Digital Equipment has announced the release of a brace of new peripherals which includes color terminals, color printers, plotters and terminals. The Intecolor 2427D color terminal is said to complement Intecolor's other Tektronix-compatible terminal, the VHR-19. ADE says the terminal, which sells for less than $5000, is suited for CAD/CAM applications. It can display eight colors from a palette of 64 colors. The TeleVideo 925E terminal comes with a detachable keyboard and a full complement of function keys. ADE says it is smaller than most terminals with its capabilities. The DMP-52 plotter, from Houston Instrument, is said to be able to plot at speeds up to 22in/sec with a maximum acceleration rate of 4G. The Printacolor ink-jet color printer comes with either RS232 or Centronics interfaces, and can operate in either eight or 127 color formats (from a palette of 4913 shades). Vertical dot density is 85 dots/in, with a horizontal density of 85 or 120 dots/in.

**Further information:** Anderson Digital Equipment Pty Ltd, 14 Whiteside Rd, Clayton, Vic 3168. Tel: (03) 544 3444.

## Non-impact laser

MACROSET has released three new non-impact laser printers. The new products combine with Macroset's Lasergrafix 1200 printer, launched last year, to provide what the company calls a broad range of low-cost laser printers for data processing and word processing installations. The printers are: the QMS Smartwriter, designed for word processing and workstation applications, the Lasergrafix 800, for desktop merging of text and graphics; and the Lasergrafix 2400, for distributed graphics and text processing applications.

**Further information:** Macroset Staff Holdings Pty Ltd, 47 Hotham Pde Artarmon, NSW 2064. Tel: (02) 437 7111.


The QMS Smartwriter is a desktop laser printer.

## Koala's Speed

KOALA Technologies has introduced a software package said to make it easier to use and customise business application programs for the IBM PC and PC XT computers. Called Speed Key, the new product marks Koala's entry into the business software market. Speed Key is said to initially support Lotus 1-2-3, WordStar, Multiplan, SuperCalc, VisiCalc, dBase II and PFS:Write. It is also claimed to support PC DOS and IBM Basic. Speed Key converts the Koala touch tablet into a custom keyboard with up to 37 programmable function keys and a cursor controller with the advanced features of a "mouse" pointing device. Koala Technologies has also released the Muppet Learning Keys, Kids' Computer Keyboard designed in association with Henson Associates Inc and Sunburst Communication. The Muppet Learning Keys is said to help children aged three and up to learn letters, numbers and colors with the help of the Muppets. Imagineering has also announced that the Koala Technologies Gibson Light Pen hardware and software system will be available for the new Apple IIc transportable home computer. The Koala system is also available for the Apple II, IIe and II+ personal computers and will soon be available for the IBM PC, PCjr and Commodore computers.

**Further information:** Imagineering, 579 Harris St, Ultimo, NSW 2007. Tel: (02) 212 1411.

## Frontier graphics

RAKON Computers has released a high-performance, low-cost color graphics terminal made by Datapath Ltd, of the UK. The Frontier terminal is said to offer Tektronix 4014 emulation plus a host of advanced graphics features. Screen resolution is 736 x 512 pixels which acts as a window to a 1024 x 1024 pixel memory. The non-displayed memory can be brought into the display window by panning or by using a page select function. Both monochrome and color versions are available, each with up to four memory planes. The screen may be split horizontally at any of the 512 lines to obtain two independently pannable display areas. VT-52 cursor positioning is said to be supported. Rakon says there are two inbuilt character sets. Graphics characters can be displayed in 16 character sizes and eight drawing directions as normal or slanted. ROM-based software is said to provide many graphics commands. Connections include a joystick port and two independent RS232 communications ports. Screen dump is supported for various printers.

**Further information:** Rakon Computers Pty Ltd, 114 Alexander St, Crows Nest, NSW 2064. Tel: (02) 43 1351.

## Dictating the pace

LANIER has released a small, hand-held dictating machine called Pocketmate. Only slightly larger than a packet of cigarettes, the Pocketmate was designed to fit into a user's pocket or small briefcase. Lanier says the machine was designed as an electronic notebook, to be used anywhere to record thoughts, comments and information. With two speeds, the Pocketmate's microcasette is said to be able to give 120 minutes of recording time. The company says the machine is compatible with the full range of Lanier dictation and transcription equipment. Retail price is $189.

**Further information:** Lanier (Australia) Pty Ltd, 77 Berry St, Nth Sydney 2060. Tel: (02) 957 6500.

## Low-cost terminal

DATRON has released the KDS 71 terminal, claimed to combine high-resolution screen with high-quality color and characters. Operating in serial, the terminal is said to be compatible with Datton's KDS 62 monochrome terminal. When run in parallel char-

acter mode, the KDS 71 is said to offer screen formatting. Datron claims the unit incorporates non-volatile RAM that can store key functions, user line data, tab positions, field deliminaters and terminal set-up mode. Cursor and edit keys are also said to be capable of being setup for WordStar commands. The KDS 71 is said to offer a full ASCII character set, 22 programmable function keys, one-page memory, with four-page memory as an option, and 11 built-in language options. ADM 31, Televideo 950 and VT100 emulations are also said to be optional. Recommended retail price is $2925.
**Further information:** Datron Pty Ltd, 79-81 Regent St, Redfern, NSW 2016. Tel: (02) 698 8211.

## SoftCard speed

MICROSOFT has announced a new *SoftCard II*, said to give Apple IIe computer users the opportunity to run CP/M-80 faster. SoftCard II is supplied with the Microsoft Basic Interpreter, which allows user-written software. Advantages are said to include compatibility to all types of Apple computers including the recently launched IIe and the more established Apple II plus. The new system is also said to be three times faster than the previous version, improving program execution. The Z80 chip has been replaced by the Z80B, allowing the program to run at 6MHz. The SoftCard II costs $635, and includes 64K-bytes of RAM.
**Further information:** Microsoft Pty Ltd, 21 Tepko Rd, Terrey Hills, NSW 2084. Tel: (02) 450 2522.

## Business printer

MITSUI Terminals Division has released a low-cost business printer, designed specifically for high-volume, high-quality use. Manufactured by Seikosha Co Ltd, of Japan, the Business Printer 5420 will sell for $2850, including sales tax. The bi-directional BP5420 is said to print in draft mode (420 char/sec) or correspondence mode (104 char/sec), with a claimed noise level of less than 60 decibels. It features an 18K-byte buffer.
**Further information:** Mitsui Computer Systems (Australasia) Pty Ltd, 1-3 Rodborough Rd, Frenchs Forest, NSW 2086 Tel: (02) 451 7711.

## A typewriter

**Sanyo's DPTYP electronic typewriter can convert to a printer.**

SANYO Office Machines has released the DPTYP daisywheel electronic typewriter, which can be coupled to a computer to operate as a 15 char/sec printer. The DPTYP typewriter is said to have a computer interface port, right-hand justification, automatic underline, centring and relocation. It is also said to have three settings for paper feed pitch and a three-step print control. Functions include a 10-char index correction buffer.
**Further information:** Sanyo Office Machines 5-9 Harbourview Cres, Milsons Point, NSW 2061. Tel: (02) 929 4644.

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## Extensive range

ARCHIVES Computers says it will demonstrate an extensive range of single-user and multi-user microcomputer-based business and vertical market applications from its stand at 11ACC, as well as offering a special show package offer. The package, costing $5999 or available on lease, includes an 11M-byte Morrow microcomputer, an ergonomically-designed Freedom terminal and keypad and a Brother dot-matrix printer. Software will include a word processing package with spelling checker, an accounting package, SuperCalc II spreadsheet, a database software program, CP/M 3.0, 8/16-bit option with MS-DOS, Microsoft Basic/80 and Pilot languages. A terminal-controlled program, developed by Archives, is included to use the programmable features of the Freedom terminal included in the package offer.

**Further information:** Archives Computers (Aust), 163 Clarendon St, Sth Melbourne. Tel: (03) 699 8377.

## Executive Pack

COMMODORE Business Machines has launched an SX-64 Executive Pack for businessmen, home managers and those involved in community work. The Executive Pack, said to be designed to make the portable SX-64 fully operational from the outset, will no longer be sold as a separate item. It will be available in the pack only for $1499. The pack, which is now the standard unit for purchase of the SX-64, includes the Easyscript word processing package; Easymail, a mailing system which operates in conjunction with Easyscript; the Manager, a database program which helps manage a cheque book, maintain a client service record, and so on; and Disk Bonus Pack, which provides a special software program including a diary function, a program which allows device numbers of peripherals to be changed, copy files from one system to another, to change the type face displayed on the screen to more exotic versions (such as Gothic), and to determine mortgage payments.

**Further information:** Commodore Business Machines Pty Ltd, 5 Orion Rd, Lane Cove, NSW 2066. Tel: (02) 427 4888.

## Sperry DEBS

SPERRY has announced DEBS, a Mapper-based computerised general accounting system said to offer tailor-made solutions without user programming. Sperry says DEBS is a Mapper foundation product which offers the advantages of both a tailor-made solution and a standard software package. It is said to allow users to tailor the system continually without doing any programming. DEBS runs on Sperry's Mapper 10 machine and on the company's 1100 mainframe series. It is also being developed for the Mapper 5 microcomputer. The starting price for a DEBS module on the Mapper 10 is about $2500. A package with all three modules — general ledger, sales ledger, and purchase ledger — costs about $7500.

**Further information:** Sperry Computer Systems, 100 Miller St, Nth Sydney 2060. Tel: (02) 929 7800.

**Commodore's Executive Pack includes printer and software.**

## PC Baby

CALIFORNIA Software Products Inc says its software system Baby/34 is now supported on the IBM PC AT. Baby/34 or its basic Runtime Systems are now supported on the IBM PCjr, PC XT and PC AT. The Baby/34 development system is said to allow programs and systems written for the IBM System/34 to be ported to the IBM PC series.

**Further information:** JBA, 8 Help St, Chatswood, 2067. Tel: (02) 411 1144.

## Pick on PC XT

TRIAD Software has entered into a licensing agreement with Pick Systems to market an implementation of the Pick operating system on the IBM PC XT. Triad says that the move means that an operating system is now available on a personal computer, minicomputer, and a mainframe (IBM 4300 series). The system is said to offer virtual memory, an English-like retrieval language, a database manager, a remarkably efficient programming language, and system utilities.

**Further information:** Triad Software Pty Ltd, 133 Alexander St, Crows Nest, NSW 2065. Tel: (02) 439 5488.

## Enhanced Sybiz

AN ENHANCED version of the Sybiz financial and accounting package has been launched by Trackfast Computer. A Sybiz upgrade, specifically developed for 16-bit machines, has also been announced. Features are said to include the capability to cater for up to 229 cost centre analyses within jobs, blanket price changes for stock ledger, multicompany/multidivision usage, cheque writing, extended part numbers and totally free text invoicing.

**Further information:** Trackfast Computer Pty Ltd, 8 Cliff St, Milsons Point, NSW 2061. Tel: 957 6838.

## Unix on Lisa

UNIX is now available in Australia for the Apple Lisa personal computer range. Specially tailored for the Apple 32-bit machines by Microsoft Corp and the Santa Cruz Operation, the mainframe/minicomputer multitasking, multiuser system was originally written by AT&T Bell Laboratories. Under the trade name Xenix, the Lisa derivation is being marketed and supported by Siromath, the organisation established in 1981 by the CSIRO and other bodies to provide Unix, mathematics and statistics to the Australian business and research communities.

**Further information:** Apple Computer Australia Pty Ltd, 37 Waterloo Rd, Nth Ryde, NSW 2113. Tel: (02) 888 5888.

## dBase III here

IMAGINEERING has announced the release in Australia of Ashton Tate's dBase III, a relational database management system for 16-bit and larger computers. The package is said to allow users to enter, manipulate and retrieve large volumes of data and develop customised application programs. Features are said to include storage capabilities of more than 2 billion records a file and 128 fields a database, the ability to use 10 database files simultaneously, and an English-like command and programming language. The system is also claimed to provide ultra-fast sorting and indexing of stored data, color display and user-interactive features such as the command assistance mode that guides first-time users with a set of pull-down menus and prompts. The software is written in C language specifically for the 16-bit and larger computers.

**Further information:** Imagineering, 579 Harris St, Ultimo, NSW 2007. Tel: (02) 212 1411.

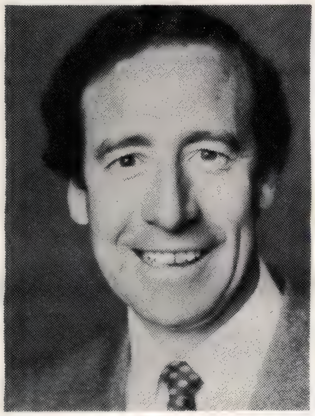
## Try before buying

PERSONAL Computer Services is offering the Padmede debtors ledger and general ledger, together with a comprehensive instruction booklet for less than 10 per cent of the package's retail price to enable microcomputer users to try the Padmede accounting software on their own machine before committing themselves to the full purchase price. The idea is to enable them to see whether or not the software suits their business. The try-before-you-buy systems are full live systems with restricted transaction volumes. The instruction booklet takes users through the systems step by step, with sample data so they can see exactly what they are getting. Padmede systems are said to run on all microcomputers with CP/M or MS-DOS, including IBM, NEC, Apricot, Sharp, Apple, Sigma, Oki, Osborne, Wang, NCR, Rank Xerox, Epson and Kaypro.

**Further information:** Padmede Commercial Systems, 26 Ridge St, Nth Sydney 2060. Tel: (02) 923 2899.

## Selling off codes

BUSINESS Computers International, of Perth, has decided to leave the 8-bit software market and concentrate on developing products using fourth and fifth generation techniques. In doing so, the company has decided to sell the source-code to most of its 8-bit software. Modules offered for sale include general ledger, payroll, creditors, debtors, time costing, job costing, club membership, assets register, bills of materials and stock (inventory).



**BCI managing director Maurice Hill.**

Modules cost $2000 to $3000 each, with substantial savings if all 10 modules are bought. Demonstration disks and documentation are available, but require a small deposit. All the software has been installed and running for at least two years, so reference sites are available.

**Further information:** BCI Pty Ltd, PO Box B70, Perth. Tel: (09) 227 9133.

## Personal range

PERSONAL Computer Services has released its range of accounting software for the MBC550 range of microcomputers running under MS-DOS. The system has five modules which are said to integrate fully or run separately, enabling the user to buy, for example, the invoicing, debtors, and stock control modules initially and then add the creditors and general ledger modules later. All five modules are said to fit on one double sided double density diskette. Personal Computer Services has also released a version of the word processing package Wordcraft specifically designed for Hewlett-Packard HP-150. The system is said to make extensive use of the touch screen with all functions able to be selected by touching the screen, enabling blocks of text to be moved around with the touch of a finger.

**Further information:** Personal Computer Services Pty Ltd, 26 Ridge St, Nth Sydney 2060. Tel: (02) 923 2899.

## Tax Scheduler

CANON has released a tax software package called Tax Scheduler in Australia. Designed to operate on Canon's CX-1 and AS-100 business computers, the package is being sold by Datapak microcomputer systems and data services in Melbourne. Canon says Tax Scheduler can be applied to all income tax schedules and covers every aspect of tax preparation and lodgement. It is also said to enable a client's name and address to be accessed and merged with another program.

**Further information:** Canon (Aust) Pty Ltd, 2 Hall St, East Hawthorn, Vic 3123. Tel: (03) 200 6200.

## Interactive graphics

TECHNICAL Imports Australia has been appointed Australian distributor for Energraphics, a graphics program for the IBM PC and compatibles. The package is said to be an interactive graphics tool which can be used in an almost unlimited number of applications; whether to create business graphs or charts, or to combine text and graphics in a report, or to provide technical CAD/CAE engineering capabilities. Some of its application areas are said to be 2D drawing, 3D graphs, statistical analysis and plotting, 3D piping diagrams, symbol design and storage, Gantt charts, layouts, flowcharts, function plots, 3D surfaces, circuit drawings, 3D with hidden-line removal, exploded views and production of 35mm slides. Energraphics is said to run on the IBM PC XT, PCjr, and most compatibles including Compaq, TeleVideo PC, Chameleon, Columbia, Hyperion, Eagle, Sperry PC and Corona. Future support is planned for the TI PC, DEC Rainbow and Wang PC.

**Further information:** Technical Imports Australia, PO Box 176, Crows Nest, NSW 2065. Tel: (02) 922 6833.

## WordStar update

MICROPRO International Corp has announced a new version of WordStar and the WordStar Professional software for the IBM 3270-PC. Both packages will begin shipment in September. The new version of these word processing programs are said to enable corporate 3270-PC users to use all WordStar capabilities while simultaneously transmitting or receiving information from a mainframe. The adapted WordStar programs will also run within the on-screen windows supported by the 3270-PC, it is claimed.

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and **PARRAMATTA:** Shop 19 Greenway Arcade
Church Street.
Phone: (02) 635 6020.

# APPLICATIONS

## Terminal petrol

THE Commonwealth Bank has taken another step towards full-scale electronic banking when a point-of-sale terminal at Mobil's Epping service station, NSW, began operating recently. It is the first commercial trial of cashless shopping using the Commonwealth Bank's Keycard, and represents the first link in a network of terminals that eventually will blanket the country. In coming months, 300 terminals will be installed in Mobil service stations throughout Australia. The Commonwealth Bank's EFTPOS system will cater initially for debit transactions only. A purchase made with a Keycard (debit card) is deducted immediately against a cardholder's account and the amount credited to the merchant's account. The new arrangements also give Keycard holders access to cash without having to go to the bank or automatic teller. The EFTPOS terminals will eventually incorporate a credit facility through MasterCard. The Commonwealth Bank says it will be conducting further cashless shopping trials at Caltex service stations, Coles supermarkets, Liquorland stores, BBC Hardware stores and Safeway supermarkets.

## Food program

A FOOD and beverage system programmed to allow different discount or premium prices to be charged in up to six different locations simultaneously is to be installed in Sydney's Macquarie University Union. The system is the first installed by Hospitality Retail Computing to contain new software which the company says enables operators in the food and beverage industry to vary discounts and premiums on prices at different points throughout their operation at different times of day. Hospitality Retail says the system will enable union management to operate a multiple discount or premium price level system in the various bars during happy hour. As an example, house scotch could be discounted 30 per cent in the public bar during happy hour. Using this new software, a premium can also be added for entertainment on band night. By switching at the computer, the relevant price change is effected and the new charges are sent down to the cash registers located in the bars and function rooms.

**Further information:** Hospitality Retail Computing Pty Ltd, 10-12 Clarke St, Crows Nest, NSW 2065.

## Traffic SCRAM

TRAFFIC is said to be flowing more smoothly in Melbourne, thanks to a computerised traffic light control system with the unlikely name of SCRAM. The Signal Co-ordination of Regional Areas in Melbourne project was first introduced in 1980, when microcomputers which could "talk" to computers were installed in sets of traffic lights around the city. It has since expanded to link almost 470 sites to a network of computers. By monitoring changes in traffic flow, the signal phases at linked intersections can be altered through the computer to maintain an even traffic flow. To meet its expanding needs, the Road Traffic Authority recently bought 19 terminals and two letter-quality printers from Mitsui Computer Systems. The authority will link these to its new Digital VAX 11/750 computers (which will take over control of the project from its overloaded PDP/44) and they will handle a mixture of project control and engineering work. Six of the Mitsui terminals (VT220) will be used predominantly for project control and record keeping for the SCRAM system, while the 13 VT241 color terminals with graphics capabilities will also be used to produce color displays showing the traffic conditions at specific intersections. The two LA100 printers are said to be able to cope with any type of work. Capable of printing drafts at 240 char/sec, correspondence at 80 char/sec and high-quality printing at 30 char/sec, the LA100s can also handle high-speed bit-map graphic printing. The SCRAM system is based on the SCAT (Sydney Co-ordinated Adaptive Traffic) system developed by the NSW Department of Main Roads.

**Further information:** Mitsui Computer Systems (Australasia) Pty Ltd, 1-3 Rodborough Rd, Frenchs Forest, NSW 2086. Telephone: (02) 451 7711.

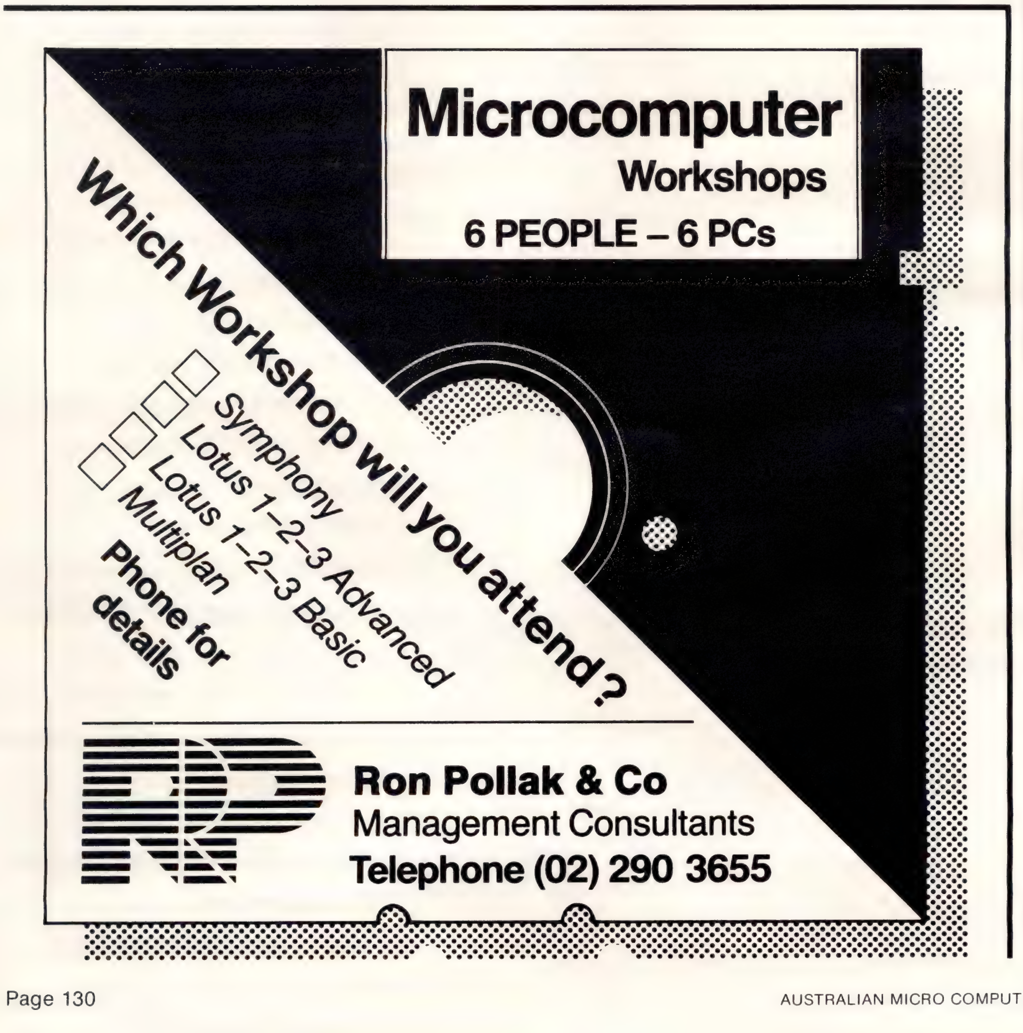
## Fingerprint link

THE Queensland Police Department will soon take part in a national fingerprint computer link, Police Minister Bill Glasson announced during the official handing over by AWA of its Australian-developed 8602 color terminal to the State police force. Some 97 of the new terminals have been installed in 52 police stations from Cairns to Mt Isa, and another 58 are to be installed. The force is to have some 300 8602 terminals available in 125 stations by the end of 1986. The system, linked to a $6.2 million mainframe, will initially be used mainly to operate the State-wide "wanted" and stolen motor vehicle monitoring system. The fingerprint facility is expected to go on line around the clock early next year.

## Digital update

DIGITAL Management Australasia of NSW, set up about a year ago to help small to medium-sized companies with their computer buying, says it has grown considerably. As a result, the company has upgraded its computer facilities.

**Further information:** Digital Management Australasia. Tel: (02) 525 7429.



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## CAD/CAM Sage

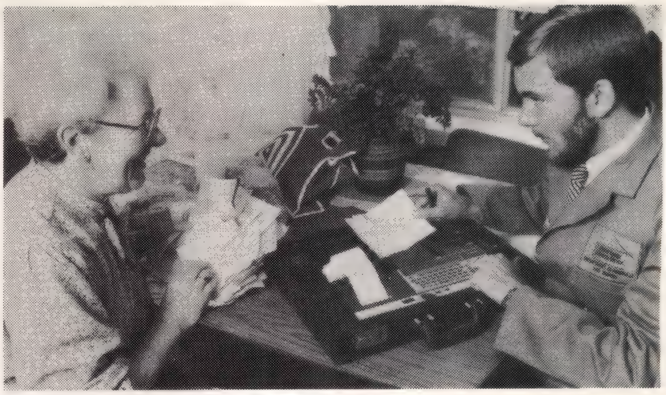
RAKON Computers is now offering its Sage range of computers fully configured as a CAD/CAM system. The system includes a color or monochrome graphics terminal, digital design tablet, plotter capability, CAD/CAM software and the Sage computer. To handle the large memory and storage requirements of CAD/CAM, the Sage is configured with one 1M-byte of main memory and a 10M-byte disk. The CAD/CAM was developed by Integrated Vision Systems of the UK specifically for the 32-bit, 68000-based Sage. All line types in general drawing use are said to be available in a selection of widths. The system is also said to provide circles, arcs, tangents, ellipses, radii, fillets and welds. A user can interactively manipulate lines, calculate distances, scale and dimension drawings.

**Further information:** Rakon Computers Pty Ltd, 114 Alexander St, Crows Nest, NSW 2064. Tel: (02) 43 1351.

## Apple athletes

APPLE *II* computers in the research laboratories of Cumberland College of Health Sciences, near Sydney, are providing new efficiencies to the performance monitoring and testing of Australian athletes. Research involving such machines has been one of the major growth areas in sports science in recent years. A continuing Cumberland program which will help identify many Australian athletic stars of the future is deriving benefit from the time and cost efficiencies offered by the computers. Announced last May, the Shaklee Junior Sports Development Scholarship Sponsorship is administered in conjunction with the Federal Department of Sport, Recreation and Tourism, and is designed to fill a serious gap in Australian athletics coaching. According to Dr Perce Russo, who heads the team of 16 specialist assessors now working with 52 potential champions, no official program previously existed in Australia for monitoring and assisting in the development of young athletes.

**Further information:** Apple Computer Australia Pty Ltd, 37 Waterloo Rd, Nth Ryde, NSW 2113. Tel: (02) 888 5888.



**Assessing gas usage with a Sharp PC 1500.**

## Computer gas

A COMPUTER program for the Sharp PC1500 developed by the Gas and Fuel Corp of Victoria is being used to improve the efficiency of domestic energy usage in Victoria. To date, more than 10,000 homes are said to have benefited from the applications of computer technology. The corporation evaluated overseas programs before deciding it could produce an Australian program which could meet local needs and would be an economic alternative to software purchase. Melbourne computer retailer and Sharp dealer Lasercord was engaged to write the software for the Sharp PC1500. The program is designed to evaluate energy usage in the home, examining each activity in turn to demonstrate where the energy is being used and subsequently to allow conservation options for each use to be evaluated.

**Further information:** Sharp Corp of Australia Pty Ltd, 64-72 Seville St, Fairfield, NSW 2165. Tel: (02) 728 9111.

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# INDUSTRY

## Toshiba postings

TOSHIBA Australia has appointed Max Fredericks as general manager of its electronic office equipment division and Paul Rimington as national sales manager.

## Silver reed

SILVER Reed has terminated its distributorship agreement with VSI Pty Ltd and will itself market the company's range of printers. It has set up a peripherals division headed by Jason Earle, who joins Silver Reed from VSI to market the printers. At the same time, the company announced an across the board price cut of 20 per cent on the entire printer range. The letter quality 80 column model, for example will now have a recommended retail price of only $787 including sales tax.

**Further information** Silver Reed (Aust) Pty Ltd, 2/2 Aquatic Drive, Frenchs Forest, NSW 2086. Tel: (02) 452 2022.

## Games award

DLM's Academic Skill Builders in Language Arts, a series of six educational games, has won a gold medal from Creative Computing magazine during the US national Consumer Electronics Show in Chicago. The award is the highest in the elementary education software category. The magazine, which singles out the best software programs for personal computers in US annual Software Buyers' Guide, chose the Academic series because it "introduce(s) and reinforce(s) the rules of grammar and syntax ... with flair, cleverness and good sense." DLM software is distributed in Australia through computer stores and school suppliers.

## Palette distributor

SELECT MicroSystems has been appointed Victorian distributor for Polaroid's Palette image recording system. The Polaroid system, which connects directly to a DEC Rainbow or IBM PC, is claimed to provide a high resolution method of producing presentation quality 35mm color slides inhouse at low cost. Using the Palette system is said to reduce the cost to around 70¢ per slide. The complete Palette system is priced at $2200, plus sales tax.

**Further information:** Select MicroSystems Pty Ltd, 431 St Kilda Rd, Melbourne 3000. Tel: (03) 2671255.

## Time travel

TIME Office Computers has moved headquarters to North Sydney, having secured naming rights to a building, at 221 Miller Street. The move brings together all of Time Office's Sydney operations apart from manufacturing and results from the company's growth over the past 12 months. In its research area alone, Time Office has added 32 scientists and engineers to work on its X-Lan project, due for release in June 1985. All floors of the new headquarters are linked with Time Office's local area network, E-Lan, providing electronic mail, telex and Austpac links to all interstate branch E-Lan systems. Time Office has scheduled an upgrade of all its branch offices throughout Australia to conform to the new corporate image.

## Suburban CAD

A CAD/CAM Village is to be built in the eastern suburbs of Melbourne under a two-stage plan by engineering software developer Moldflow Pty Ltd. The village has been financially supported by the Victorian Economic Development Corporation as a way of boosting the State's high-technology industry. Moldflow recently bought a 3ha site in Kilsyth and will use the government loan to finance the first stage of the village, consisting of a modern office development complex with a central computer room, lecture theatre and demonstration facilities. Within this initial complex will be office and development space for lease to Australian software companies. Moldflow managing director Colin Austin described his village concept as a software "think-tank" environment, with companies working together to share a central core of facilities, such as computer hardware systems from single workstation micros to superminis. By sharing these resources, overheads would be reduced and new developments could be brought up to a commercial standard.

Polaroid Palette, to be distributed by Select Micro Systems.

## Arcom manager

ARCOM Pacific has appointed Mr Barry Clancey as product support manager to meet the rapid growth the company is experiencing. Clancey will work with product manager, Bill Bolton. He has nearly 13 years' industry experience, including two years with ICL.

## Sigma agreement

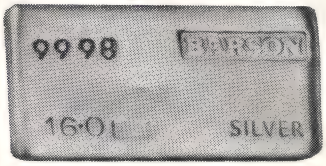
SIGMA Data Corporation Pty Ltd and Computer Power Pty Ltd have signed an agreement under which Computer Power will become a reseller of the Convergent Technologies range of products, distributed in Australia by Sigma Data. Computer Power will be marketing the complete range of Convergent Technologies' computer systems, including N-Gen workstations, Miniframe and Megaframe and will be adding value to the Convergent Technologies' systems by packaging application software with the hardware and other peripheral devices.

## Trackfast manager

TRACKFAST Computer Pty Ltd has appointed Steven Davey to the new position of software installation and support manager. With a 10-year career as an accountant, Davey is to handle the Sybiz financial and accounting package. Davey is also responsible for retraining end user staff in the use of Sybiz applications. Tackfast has also appointed Christine Wareham as chief administrative assistant. Further appointments are planned to support Davey in the installation of Sybiz systems on behalf of Trackfast's 150-plus dealer network.

## Compsoft award

COMPSOFT of Brisbane has won Barson Computers' Dealer of Month award, run Australia-wide among more than 100 dealers of Sirius, Apricot and BBC microcomputers. The award consists of a 455g silver ingot.



## Amust goes direct

AMUST Computer Corp Pty Ltd has decided to return to doing business direct with its dealers rather than through State distributors. Only in Western Australia — because of costs involved in servicing a territory 4000km away — Xacom will remain as Amust's representative. Dealers have been told they can now draw from Amust's $500,000 inventory and receive those goods the next day in any part of Australia.

## Spectravideo sale

BONDWELL Holding Ltd has acquired a controlling interest in Spectravideo Inc, the ailing home computers and games maker. Bondwell, holding 16 per cent of Spectravideo stock, is the major supplier of products to the company. Under terms of acquisition, Bondwell has undertaken to arrange financing for Spectravideo's future operations. In addition, Spectravideo will restructure its debt with Bondwell's help. The company has been relocated to Fremont, California, from New York.

## TCG manager

THE TCG Group has appointed Kevin Crook Queensland sales manager for its computer graphics division. Crook holds a diploma in mechanical engineering from the UK and in Australia has been largely involved in the marketing of computer bureau services for Honeywell and Control Data in Melbourne and Computer Sciences in Brisbane. Most recently he worked with AIA Computing in the microcomputer field. The TCG Group also appointed Suzanne Maynard as systems consultant in the portable data entry division of its Sydney office. Previously with Avis, Maynard will be responsible for program specification, development and consumer support.

## French Sendata

ELECTRO Medical Engineering has secured a large overseas contract for its Sendata 700 series acoustic couplers to be manufactured under licence in France. The contract could involve the manufacture of up to 10,000 acoustic couplers per year by French company HB Informatique, if market demands live up to expectations. France will be the seventh overseas country in which the Australian-designed Sendata couplers will be sold. Already, up to 40 per cent of the Victorian company's total sales of acoustic couplers are taken up by different European countries. Electromed will supply some of the casing components of the couplers, with HB Informatique manufacturing and assembling the finished product.

## Barson contract

THE NSW Contract Control Board has approved the letting of a multi-million dollar microcomputer tender for the Department of Agriculture to Australian company Barson Computers Pty Ltd. The two-year period contract is for the supply of Apricot PC microcomputers for which Barson is national distributor, and all associated communication and applications software. The Apricot microcomputers are to be installed progressively at the Department of Agriculture's 400 offices around the State, and will be used as intelligent terminals for the Department's Prime computers at its major banch offices.

## Victorian grant

VICTORIA'S Minister for Industry, Commerce and Technology, Ian Cathie, has granted $60,000 to help the development of AMIC, the Australian Microcomputer Industry Clearinghouse, recently established at the Royal Melbourne Institute of Technology. Cathie said that the grant "will go some way towards developing the clearinghouse as a major and respected, independent advisory service". He said the grant to AMIC is part of the support the Victorian government is giving to technical service agencies to help them with their work in assisting Victorian businesses. The Royal Melbourne Institute of Technology (RMIT) announced it had agreed in principle to become Australian agent for .Menu, the international micro and minicomputer software database marketed by the US-based International Software Database Corporation (ISDC) which contains 52,000 software listings.

## In schools

KNOWLEDGEMAN, the information management system from Micro Data Base Systems Inc distributed in Australia by Data Base Management Services, is now available to schools for teaching purposes. Micro Data Base Systems is associated with Purdue University, in the American State of Indiana. As a result, the academic influence is strong within the company, and the use of Knowledgeman in the universities, colleges and schools is seen as an integral part of the product marketing. A multi-licence agreement is available, whereby schools can make copies of the program for use on their computers for a $1000 site licence. It allows the school to make copies of as many disks as are needed for the students enrolled.

**Further information:** Data Base Management Services, Suite 6, 83 Glen Eira Rd, Ripponlea, Vic 3183. Tel: (03) 523 5947.

## Sigma promotion

SIGMA Data Corporation has promoted Narelle Behn from product manager to manager, corporate marketing, reporting to Michael Faktor, chairman and chief executive officer. Behn will be involved in corporate development and planning and her responsibilities will include advertising, promotions and exhibitions, corporate market research, development of company motivation schemes and co-ordination of investigation of new products.

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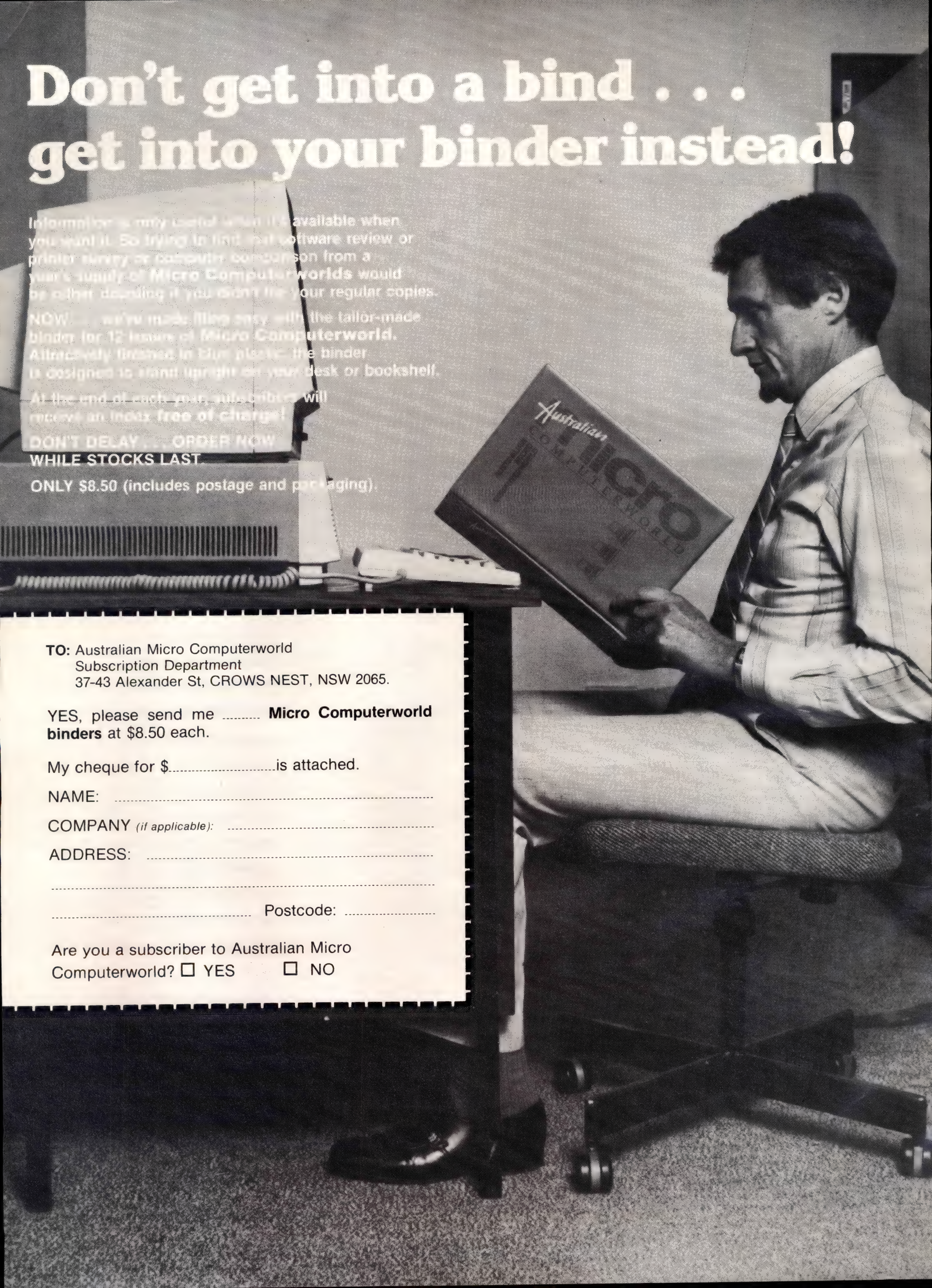

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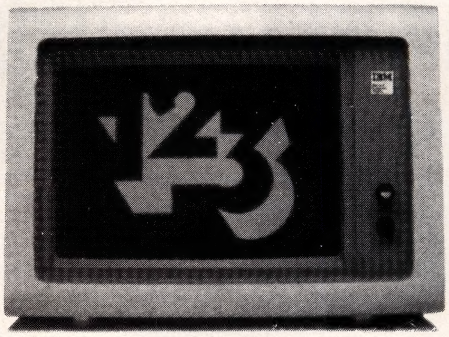

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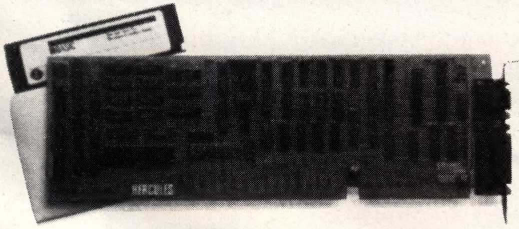

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## JOHN DVORAK

# SEND IN THE CLONES

HAS Microsoft's original version of Windows **failed?** Windows is supposed to be a universal-interface operating system, designed so that applications software can use all the graphics and drivers needed at the operating system level. The programs call the operating system to do everything — no jumping to read-only memory routines.

Rumor has it that **IBM wants** this kind of operating system (also called a virtual-device interface) because it's going to bring out **new read-only memory** and a lot of new graphics cards **incompatible** with the old color card. So IBM is visiting all the software vendors and telling them that their software had better **stop** calling the IBM read-only memory. No software produced with the IBM label will contain any read-only memory calls as of the day the PC AT was announced.

This is causing dissension at IBM corporate headquarters because the company knows that this type of environment will allow the clone manufacturers to use a virtual-device interface to make their machines de facto compatible no matter what the machines have in their read-only memories. Some think that the recent **minishakeout** is an attempt by IBM to get rid of as many of the cloners as possible before the virtual-device interface concept takes hold.

Meanwhile, Pacific Northwest gossip has it that some former **Tektronix hotshots** are negotiating with both IBM and Microsoft to sell those companies a copy of a product called GSS/GKS — **Graphics Kernel Software** from Graphics Software Systems. Graphics Software Systems works closely with another company called Communications Dynamics — another group of former Tektronix engineers.

Graphics Software Systems is known to have produced the **original GSX interface,** marketed by Digital Research as its own. It's a fascinating product that has not met with the success expected by Digital Research — causing much **head scratching** there. Anyway, if you look at GSX, you'll get an idea as to the power of the next generation of operating systems. We should begin to call these things operating **environments.**

So the **rumor** is that Windows will turn out to be largely software from Graphics Software Systems, and maybe IBM's Top-View will be the GSS product, too. We'll see.

Are the days of the ubiquitous **IBM PC** numbered? I got a note from Kansas correspondent Mike Drips:

"Let me tell you a story based on my experience with IBM, dating from the '60s. IBM has always maintained a **six-year** product life cycle in regard to computers. It introduces a computer, supports it for three years, introduces a new computer, and declines the amount of support on the first computer over the next three years, until the end of the six-year product life cycle, when your costs for maintenance nearly triple.

"People have said that there will always be support for the IBM PC. Sure, there'll always be support for the Sol and Osborne 1, too. But at what price? At what quality?

"We're both happy with our IBM PCs. But will we still be satisfied when we see an IBM PC AT run 1024-by-1024-pixel graphics?

"Think about it: the introduction of the PC AT on the third anniversary of the IBM PC's introduction".

I also heard that IBM is using prototypes of the **mysterious** Intel 80386 chip to develop its **next generation** of minicomputers — **System 39.** It's all part of a plan to create a continuity all the way from the PCjr to some future big bruiser machine.

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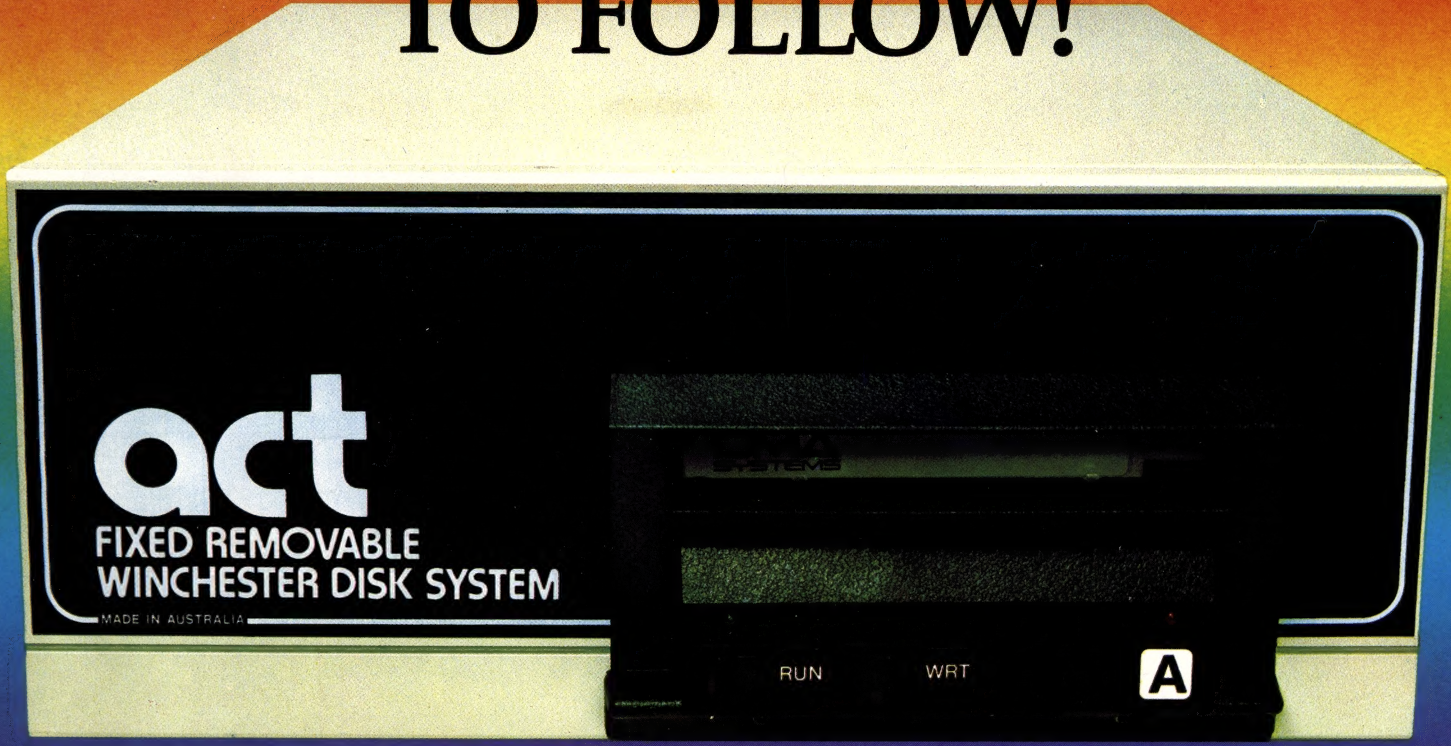

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